



A Positive Anchorage for Alloy Fillings, and the Use of the Matrix.

By DR. WILL S. PAYSON, Castine, Me.

One of the most important parts of a filling is its anchorage, for without this the filling will not stay in place. This anchorage should be obtained in such a way as to conserve the strength of the tooth to its maximum. This may easily be done in badly decayed teeth by using a double headed gold plated wire. Dr. West, of Missouri, suggested using the double headed pins from porcelain teeth which were illustrated in the *Cosmos* in 1888. This gave me the idea, but the platinum pins there suggested are not practical, for they are too large for most cases and are not usually of the right length, and are expensive, especially when something else is better.

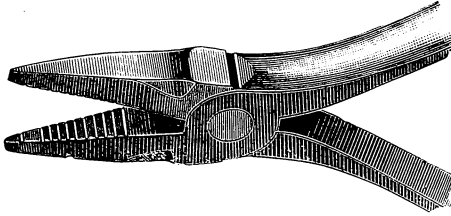
I use double headed rivets made from gold plated brass wire about No. 23, or a trifle smaller, that can be obtained at jewelers' supply houses. In fillings that will have great stress on the anchorage, we use wire No. 21 for the rivets but No. 23 is large enough for ninety per cent. of all fillings. These should be kept made up in assorted lengths.

Special Pliers for Making Rivets.

To make these handily one should take a cheap pair of 5-inch pliers and file the points tapering so they will be less than one-sixteenth of an inch at the points, beveling the inside edges (Fig. 1). The coil of wire has one end headed in the vise with a very light hammer, then the

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wire is grasped in the pliers close to the head, the wire cut off and the other head made on the pliers. If the wire is grasped near the joint, the rivet will be a long one and if near the points a short one. The points of the pliers should be filed to one-sixteenth of an inch or less as we frequently need rivets as short as that. It gives a better head by having the inside edges of the piers beveled as stated above.



Use of Rivets for Retaining Fillings.

Fillings in bicuspid having an extensive approximal cavity, can be securely anchored by cutting to the end of the occlusal fissure, enlarging the end linguo-bucally a little, and letting one end of the



Fig. 2.



Fig. 3.



Fig. 4.

rivet rest in it and the other end in the main part of the filling. The fissure should be cut only enough to let the rivet rest in it with a very small space around it for the alloy (Fig. 2).

The rivet will hold the filling with a good seat gingivally, and the more sound tooth structure left here the better. No grooving should be done in the sides of the cavity for sake of anchorage, for this weakens the tooth.

Bicuspid with extensive cavities on both approximal sides may have fillings anchored with rivets extending from one to the other, but do not cut the occlusal fissure any deeper nor wider than necessary to remove the decay, for we need this part of the tooth structure to support

the buccal and lingual walls. This fissure need be but a little larger than the rivet, though of course the rivet should be completely covered when the filling is dressed to shape (Fig. 3). In the same manner the rivet can be used in molar fillings; also in extensive cavities in the distal side of worn down cuspids where it is so hard to retain fillings.

A bicuspid having a filling on an approximal side with rivet in the occlusal fissure, later having a cavity form on the other approximal side can be repaired by first putting a wedge against the old filling, drilling out the rivet and putting in a new one with one head in the old filling and the other head in the new filling, thus positively holding both fillings.

Sometimes we can build down most of the crown of a molar having the pulp alive by forming a groove in the direction of the tooth's axis

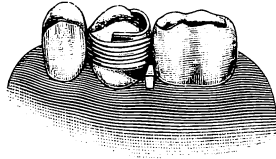


Fig. 5.

on the buccal and one on the lingual side, and bending a wire like a double pointed tack with a head at each end placed in these grooves. Of course the end of these grooves should be enlarged so that the headed staple can be firmly bedded and the staple so shaped that it will be completely covered with the filling (Fig. 4).

If a lower molar, place one groove over the mesial root and one over the distal root for this does not weaken the crown, as it would to make these grooves down towards the bifurcation. If the occlusion is so close in the center of the tooth that a staple cannot be used, a double headed rivet can be used on each side in these grooves.

Line all cavities that are at all extensive with oxyphosphate to protect the pulp from the thermal shocks and to keep the amalgam from showing through; do this before putting on the matrix, thus having a good chance to shape the cement. The large majority of approximal alloy fillings in extensive cavities are made flat with no attempt at contour, because if brought out to the original tooth shape, the filling would become dislodged with the ordinary method of anchorage. We all know, whether we practice it or not, that it is essential to have fillings replace the lost shape of the tooth, not only to preserve the tooth itself but to preserve the inter-proximal gum tissue which is so important.

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Use of Matrices.

The only way to be sure of obtaining this contour is to use the matrix. This not only gives the contour but affords a chance to pack the fillings close to the cavity walls without its sliding away, and makes the finishing easier. I use matrices made of thin steel strips sold by the S. S. White Co. It comes five strips in a box for about twenty-five cents, and from this I make them of different lengths and widths. Cut up a dozen or so of different sizes, punch a hole in each end, grind the edges of the hole and edges of matrix so as not to cut the ligature, hold the matrix with a pair of foil carriers in each hand over a flame, curve about as it would lie around a tooth and when cool, the matrix stays curved.

These can be used over and over many times; as soon as taken from a tooth, pass it through a flame, which sterilizes it. I seldom use anything to hold them in place except a ligature and a *very* narrow wood wedge at the extreme gingival edge. If a wide wedge is used, it flattens the matrix too much towards the occlusal part and spoils the contour.

Dr. Clapp, in the American Text Book of Dentistry, gives a way to start the ligature with the matrix, which is to pass the end through the hole from the inside, then around the matrix and through the other hole, then tie around the tooth. This is all right if there is plenty of space for both string and matrix pushed in together, but a better way is to tie the end of the matrix that will come on the lingual side at the middle of the ligature and then pass one end of the thread through the other end of the matrix, then slip matrix in place with two parts of the string around the opposite side of tooth, and tie. Then put the narrow wedge at the extreme gum edge and carry the ligature about tooth and matrix several times, tying a surgeon's knot each time (Fig. 5). If cavities are on both sides of the tooth, put the matrix nearly around it with the ends on the buccal side; put the wedge or wedges in from the lingual side. If the ends of the matrix cut the thread, use a piece of copper wire such as Dr. Angle uses for regulating, and outside of this, if needed, use the silk. The ligature should be of the coarsest waxed floss silk and the best I can find for this purpose is that made by the S. S. White Co.

In placing the matrix around a badly decayed tooth the patient can sometimes help us in keeping it in place by closing the opposite tooth against it while we tie the knot.

Sometimes where a molar is badly decayed on both sides, it is better to use two short matrices with an end of each tied together, instead of a long one, as the two tied fit the tooth better.

After the matrix is in place, look at the margins of the cavity and

see if they are all right; if not, make them so. This is another advantage of the matrix, as margins show to better advantage when it is in place.

Then select the rivet of the proper length and fill cavity with a quick-setting amalgam to a little above the groove for the rivet; then scoop out the soft filling, place the rivet and pack more amalgam over this and finish (Figs. 2 and 3). If Fellowsip or Twentieth Century Alloy is used, the matrix, if made of this thin steel, can be carefully removed in five minutes after the filling is put in, and the filling finished in a very short time.

The Use of Porcelain Facings in Large Inlays.

BY DAVID G. MARKS, D.D.S., Chicago, Ill.

The method herein described offers several advantages which will be easily grasped, and is especially adapted to the restoration of angles in the anterior teeth. The preparation of cavities of this class is that suggested by Dr. Arthur Peck, of Minneapolis (see Fig. 1) with such modifications

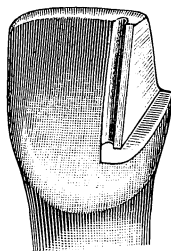


Fig. 1.

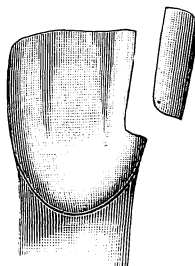


Fig. 2.

as may be necessary for the individual case. After having prepared the cavity the impression is taken with gutta-percha, from which a model is made with cement. Ames's oxyphosphate of copper seems to be the best for this purpose. The matrix of 1/1000 platinum inch can be either burnished or swaged upon this model, preferably the latter method.

A long pin tooth facing is now selected, of the shade corresponding with the tooth and with a thin diamond disc, or carborundum stone, the angle corresponding with the angle that is to be restored on the tooth is cut off (Fig. 2), and after being properly trimmed to shape is fitted into position upon the matrix; a small portion of porcelain powder mixed very thin is brushed over the back to secure the piece of porcelain to the matrix. It is then baked and allowed to cool. The porcelain section will be found to have become adherent, though it may have lifted slightly away from the

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labial margin. By replacing the matrix upon the model, a slight pressure will cause the section to assume its correct position, or if the swaging method is used it can be replaced in the swaging outfit from time to time as the baking progresses and refitted. A lingual body can now be packed and baked, care having been taken to allow no porcelain to cover the margins until the final bake, at which time any imperfections which may be noted in the joint at the labial margin can be filled in. After this bake, the inlay can be replaced upon the model, and if there is any excess of porcelain or an overlapping at the margins such points may be trimmed. A very slight baking is now necessary to secure a proper glaze. The subsequent steps are the same as in any other method.

Preparing the Facing.

I have had no difficulty in securing a perfect adaptation between the ready-baked porcelain section and the labial margin, for the reason that I always prepare the cavity in such a fashion that the labial margin is a perfectly straight line, and it is only necessary to obtain a similar line in the porcelain section. I use for this purpose a carborundum stone of large diameter, using the flat of the stone. I never use a coarse grit, but prefer the very finest grain I can get. Coarse-grained stones are apt to leave the cut edge of porcelain in a jagged and chipped state; they will also discolor the porcelain by leaving small particles embedded, which will become fused. I have secured a very fine adaptation by using a flat, true Arkansas stone, such as is used for sharpening instruments. I mount the section upon a small stick, on the end of which is a piece of sealing wax, and into this the section is stuck. If these steps are carefully carried out the joint at the labial will require very little attention, and the additional porcelain that may be needed to fill in will be so slight in quantity as to have practically no effect upon the color.

I have found that upon cutting off a small portion of porcelain from a tooth facing, which previously matched the tooth to be restored, in shade, the small portion lost its shade to a certain extent, owing to its loss of bulk and consequent loss of refractive property. This property can be restored by the use of oil colors, which are painted upon the back of the cut section before placing it into position upon the matrix. I have also found this to be a good medium to overcome the absorption of the light rays by the cement. Another thing which I might mention is that I have found Consolidated teeth to be the best for the purpose, as they retain their shade, and, being very dense in texture, cut to a finer edge than other makes.

The advantages claimed for this method are: First, a minimum of shrinkage, consequently little or no distortion of the matrix; second, a greater certainty of securing the correct shade, and third, the time saved in baking and the more perfect margins.

Gold Inlays in Abraded and Other Surfaces.

BY H. B. HARRELL, Gainesville, Texas.

Having had some twelve or fourteen years' experience with gold inlays as I make them, and as they constitute a large percentage of my work, and have proven so satisfactory, I will try to give my method. I have naturally read everything that I have seen in my journals relating to gold inlays, and when I noticed the article in the January ITEMS OF INTEREST, by Dr. C. T. Trigger, of St. Thomas, Ontario, and what he said in regard to the requirements of a cavity for an inlay, I thought my experience might be of interest, as I do not find it necessary to have a cavity with depth for retention. In fact, I often place inlays where there is no cavity.

My first experience was with the abraded saucer-shaped grinding surfaces that had become very sensitive. I am governed by the conditions in deciding whether I make any further preparation than the depredation has made. If I find the concave surface extending over the whole grinding surface I make little or no change; but if not, I sometimes extend it over the parts that are liable to be affected by abrasion. I select some three or four points near the enamel line and with a round bur of good size, I make slight countersinks, extending them toward the center, or deeper part of the cavity. I take an impression of the surface with plaster or cement, into which I run a Malott's metal die. I drive this die into a piece of lead for a counter and between these I swage a thin piece of platinum plate (as thin as I can roll it). I take a small spear-pointed drill and drill a small hole in each of these countersinks (in natural tooth), about one-sixteenth of an inch deep; place the swaged platinum in place on tooth and make a small puncture through platinum into each hole. Shove a small platinum pin through each of the punctures to the bottom of the hole. Press over these a softened piece of hard wax and remove all together. Set the pins and exposed platinum surface in a little investment, and, when set, melt out wax and flow pure gold around the pins. I use for pins tooth-pins with one head filed off. To make sure of a perfect fit, remove the piece from the investment, replace it on the tooth and press and burnish it to a perfect adaptation, especially at the margins. Place on another bit of wax, remove and invest as before and flow the cusp of twenty-two-karat gold. It is then ready to set with cement and finish.

The first one that I made stands today like a monument in a worn-out set of teeth. This case came to me some twelve or fourteen years ago with all the teeth in fair condition except this one, which was abraded and

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so sensitive over the surface where I placed the inlay that he said he could not chew on that side and wanted the tooth extracted. His teeth have had no care since. I asked him today if he ever cleaned his teeth, and he said that he sometimes chewed a little gum. Since that time I have made fillings in about the same way on almost, if not all, the different surfaces of the different teeth, with uniform good results. I fill all deep cavities with cement and remove the amount of cement that I want to replace with gold and proceed to make the inlay about as described, building up in my matrix the walls and corners as I want them with hard wax, and incase this with a strip of thin platinum; remove all together, invest, melt out wax and flow the box full of gold, partly finish, then set with cement and finish.

Advantages of Platinum Matrix.

The finishing of filling removes the exposed platinum. You cannot detect in the finished filling the line of platinum matrix nor any line of cement if the work has been properly done. The reason why I use platinum for my matrix is that I can make the fillings for the front part of the mouth of pure gold, and another is there is no danger of melting your matrix; another is, if a little gold should flow on the impression surface it would spoil the possibility of a fit, but with platinum you can cover the rest of gold surfaces with wax and drop it in a little *aqua regia* and warm it up a little (not enough to melt the wax), and in a few moments the gold is gone and the surface is as perfect as ever. After making your filling for deep cavities, remove the cement and refill with cement, setting the inlay in the fresh cement and finish. You then have virtually a cement filling with an indestructible gold covering.

A Few Thoughts About Pyorrhea.

BY DR. BESSIE BURNS BENNETT, Baltimore, Md.

Volumes have been written about that insidious disease of the oral cavity known as pyorrhea alveolaris, and volumes more remain unspoken in the breasts of those who have spent many weary hours trying to solve the problem, but in all that has ever been written I do not remember having seen the theory I am about to offer brought forward, so for that reason I ask my readers' attention again for this time-worn subject.

Has Pyorrhea a Gynecological Background?

Whether it be that patients of the gentler sex predominate in my practice, rather than those of the sterner, or whether my theory be really a fact, I am not quite prepared to say, but I am impressed with the idea that pyorrhea alveolaris is found more fre-

quently in the mouths of women than of men, and my observations tend to indicate that among women it is found more frequently in the mouths of those who are victims of gynecological disorders than in those whose genitive organs remain in a slightly faulty or entirely normal condition.

It is an acknowledged fact that gynecological disorders generally bring in their train affections of the renal organs, and how well we know that disorders of the urinary tract, bringing about a uric acid diathesis, have been from time immemorial held up as occupying a most important place among causative relations to pyorrhea.

Following up this uric acid diathesis, I am almost convinced that should examination go further, embracing the uterus and its appendages, the trouble will be found to be there and treatment thereof will result in a cure or a betterment of the pyorrhea condition.

That my theory is not without foundation is evinced in the citing of the following cases:

Cases from Practice. A woman probably twenty-eight years of age, my first patient, of whom I am truly proud, as she

Case 1. had been treated by several of our best practitioners with no success, and was discharged by me within a year—cured! While her case, from a “definition” standpoint cannot be termed “full-fledged” pyorrhea, yet every phase of the disease was present, with the exception that the flow of pus was slight. She presented herself to me with the four lower incisors so loose that I could have picked them from their sockets with my fingers. The cuspids had also begun to be affected, being perceptibly loose. That the other inferior teeth were not affected I attribute to the fact that a bicuspid on either side had gone the way of the forceps. The gums were spongy and purplish in appearance, and had receded so that a great portion of the roots were exposed. The teeth were so sore that the patient could not use them in mastication, and to massage the exposed root portion caused extreme pain. This was at the very outset of my career, and with all the energy and bright vista of the newly graduated, I desired to achieve great things, and in this connection I may say I *achieved* them.

The first step was to thoroughly clean the teeth, removing every particle of tartar and massaging every portion of tooth structure with an orange wood stick held in the hand, using tri-chloractic acid as an escharotic, and pumice-stone, combined with H_2O_2 , as a cleansing agent. This treatment was gone through with three times a week, and even at these close intervals tartar was always present. Tincture of myrrh, full strength, was prescribed for use on the toothbrush, and several drops in water as a mouth wash. The massage was faithfully continued, as I reason from the point that if massage yields such excellent results in

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other parts of the body, why should not the teeth, which are one of the most important sections, receive their benefit from it; likewise the gums, which are as much muscle as the muscles of our face? A jacket was also worn about the teeth to keep them firm.

After about three months of treatment the teeth showed signs of becoming firm, and about this time the patient was away from the city for about six weeks. Imagine my consternation to find upon her return that the teeth were in even worse condition, probably, than when she first presented herself to me. My conviction naturally was that the change occasioned by her visit had done more harm than good, so again I began operations, again the teeth became nearly firm, only, for the second and the third time to loosen and return to their former condition.

One day, from another member of the family, and entirely by chance, I learned that the patient was a sufferer from some form of uterine trouble. It was then that my theory began to unfold itself, and at the next appointment I questioned her and found that each time the loosening of the teeth was concurrent with the menstrual period. Being a sensible woman, the patient was taken into my confidence, and I told her what I thought to be the case, and placed her under the care of her family physician, myself writing to him and offering him my diagnosis of the case. At the next menstrual period, the loosening, though scarcely perceptible, was still present, but conditions continued to improve, until within a year of the first sitting the teeth were as firm as ever, the gums showing a slight recession only, and, what is better, the teeth *continue* to *stay* firm. The patient reports to me bi-monthly for massage of the teeth and removal of any tartar that may have accumulated.

The next patient came to me through the first grateful patient, and having had light upon a dark subject, I questioned her at the outset. She was a person about thirty-five years of age, married, but childless, and immediately acknowledged uterine derangement. She was sent to her physician, and although the success was not so marked as in the first case, as the disease had progressed to such an extent as to have laid bare nearly the entire root of the right central and lateral; still the cuspids, bicuspid and molars, which were affected were saved, and the patient is improved in every way.

One strange phase in connection with this patient is that every crown placed in position causes the shrinking of the gum just far enough to be away from contact with the metal, although I am especially careful that the band fits snugly at the neck of the tooth, so as to give rise to no irritation.

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Case 3. The next was an unmarried woman about forty-eight, with a well-developed case of pyorrhea. She rather indignantly disclaimed any idea of uterine trouble, and assured me that the disease was inherited, all her family suffering from it, and refused to submit to treatment, informing me that she "had no money to waste." Expostulation was vain, so I extracted the worst, but took a stand against extracting the superior left second bicuspid and first molar, the loss of which, I plainly told her, would add ten years of age to her face. This probably appealed to her vanity, for no woman cares to look older than she is, so these were treated and crowned and became fairly firm. Those extracted were replaced by plate work.

I afterward learned through other sources that the patient was a sufferer from gynecological troubles, having at one time an operation performed for the removal of a vaginal tumor.

So, while the third case is merely offered as circumstantial evidence, the other two surely indicate that there is a causative relation between gynecological troubles and pyorrhea alveolaris.

Hereafter when a patient presents for treatment for this disease I shall question her, and even though she disclaim any knowledge of gynecological disorders, I shall supplement the letter to her physician, with the suggestion that he look behind the uric acid theory for possible uterine or ovarian complications. If any of my professional brethren have made their observations on this much-to-be-dreaded disease, I sincerely hope they will make them known, as any progress toward the betterment of conditions surrounding it will benefit not only the profession at large, but the many human beings suffering from the malady.

Conservatism.

By E. ARTHUR MESERVEY, D.D.S., Kearney, Nebr.

Why is it that so many writers in our dental magazines make claims that are impossible and cannot be carried out in all cases? They are misleading and are often injurious to those who attempt to follow them, especially to the younger members of the profession.

In the May (1904) number of *ITEMS OF INTEREST* there is an article by Dr. T. S. Phillips, of Buffalo, N. Y., on "Pressure Anæsthesia and Immediate Filling Without Removal of Pulp Tissue from Fangs," in which he says:

"In the hands of many arsenic is a menace to human life; its action

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when applied *carefully* causes not only the death of the pulp, but renders the tooth an absolute foreign body by destroying the periosteum, necrosing the bones of the jaw, causing epulis and often blood poisoning."

That statement alone is enough to make a man shudder and grow sick at heart and throw his arsenic bottle so far as he cannot see it, and if I were just a beginner I might do so, but having used arsenic for the past ten years without serious results (to my knowledge) I shall still continue its use.

I am an advocate of pressure anæsthesia, but choose my cases—I have had cases where pressure anæsthesia *would not work* even after I had a good exposure, but, with one application of arsenic, I was able to remove pulp without pain with the aid of cocaine. I, for one, am not ready to give up my arsenic, especially as I have not seen any bad results from its use. I often have occasion to devitalize sound teeth for bridge-work. I am forced to use arsenic, often two or three times, before I reach the pulp (without pain). I acknowledge it can be done without, but my patients object to being hurt.

The writer goes on to say he has removed the bulbous portion of the pulp, using some kind of mummifying paste, of which there are many on the market, none of which are very satisfactory in his hands; and in the same breath says he uses a dry preparation in the form of a tablet; that it is wrong to use a moist substance under a filling.

I take it for granted that the tablet is a mummifier of some kind, but how long will that tablet remain dry?

He further says that all softened dentine that can be removed without pain is carefully cut away, leaving a good exposure.

How many pulps can be exposed without a great deal of pain? Here is the point; the article reads and sounds very beautiful, but how much of it is truly practical?

The young man just from college is ever ready to adopt new and easy methods. He reads an article about exposing pulp without pain and takes it for granted it can be done in every case. If this man can get along without arsenic, and if its use is a menace to the public and a destroyer of teeth, he must do likewise, forgetting that this is the opinion of *one* man.

My experience teaches me that there are no two cases alike, no two people with like temperament, no two dentists who operate alike. I myself have had pulps exposed and removed with pressure anæsthesia with but very little pain. I have also had fillings inserted over bleeding pulps, but I am not warranted in doing the same to my patients in every case.

When in college I heard professors tell about filling roots to the end and no further, and I believed them. After I graduated I read glowing accounts of the use of mummifying paste, and I used it in every and all cases. Now I am more conservative and seldom, if ever, use it.

The young man who reads about the removal of pulps by pressure anæsthesia thinks it can be done in all cases just because this *one man* says so. The result is that he forces his patient to submit to his tortures, thinking that they are simply feigning pain.

We read marvelous accounts of the porcelain worker who tells of the twentieth century filling and how it can be used in any and all places; of the man with the sensitive dentine obtunder and mummifying paste.

Be conservative. Do not be wedded to any one method and treat all cases alike. There are places for fixed bridgework and places for removable bridgework. There are places for porcelain and places where it should not be used. There are places for gold crowns and places where they are unsightly and vulgar. There are pulps that can be removed with pressure anæsthesia, and pulps that require the application of arsenic. Study well your case. Do not compel your case to fit your method, but let your method fit your case.

Criticism of Dr. T. S. Phillips's Paper on Pressure Anæsthesia.

By J. E. STOREY, D.D.S., Morenci, Arizona.

Dr. T. S. Phillips, in his paper on "Pressure Anæsthesia," and immediate filling without removal of pulp tissue from fangs, in the May, 1904, *ITEMS OF INTEREST*, says: "For the past seven years I have not had arsenic in my office, but have treated all cases where it had been indicated in the following manner: I have been using pressure anæsthesia, removing the bulbous portion of the pulp and filling with mummifying paste of some kind, of which there are many on the market, none of which are satisfactory in my hands. I believe the principle of using moist substance under a filling is wrong. For the past four years I have used an absolute dry preparation in form of a tablet, and have not known a failure in the thousands of cases so treated."

Now I fear the Doctor has failed to note the connection between his two statements, when he says that for the past seven years he has treated

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teeth in the following manner: Using pressure anæsthesia and mummifying paste of *some kind*, none of which he finds satisfactory, as he believes the principle of using moist substance under a filling wrong.

For the past four years the Doctor has used an absolute dry preparation in the form of a tablet without a failure in the thousands of cases so treated. The above work, as you have seen, has covered a period of seven years. From the Doctor's own statement three years of that time were made up of failures, as the moist treatment did not prove successful. He finally adopted the dry treatment, which has proven so successful that not a failure has been noted in the thousands of cases so treated.

What has become of the patients treated during those three years of failure? Have they migrated to some other dentist or place? or does the Doctor employ an assistant to care for them, as he, himself, is too busy, according to his own statement, handling his new cases, to give any of his valuable time to the old ones?

I do not doubt the Doctor feels fully satisfied that his last treatment is the treatment of all treatments, yet it took him three years to find that some kind of mummifying paste "was not it." Can he, in the space of four years, tell us that the dry treatment will not show as bad results in the end as the wet treatment?

It is just such articles as this that lead the poor blind young dentist so far astray that he is years getting back that which he loses in one. It is true we are looking for practical hints that will aid in alleviating the suffering of our patients and shortening the time of an operation, but we do not expect to find them in an article like the above, where the writer himself is not sure of his treatment.

I have, myself, seen the same mirage, and can positively state there is no assurance of success. There is but one sure way: use that valuable time, even though time is money, destroy the pulp, remove it entirely from chamber and fangs, and fill each root to the apex.

The Doctor names one point in favor of the method: the teeth do not discolor. He then calls your attention to typical cases, naming the third molars and buccal cavities, stating that the operation is performed without cutting away valuable tooth structure. I find the above one reason why half of the pulpless teeth do discolor. If the operators would use their engine and excavators a little more vigorously, there would be less discoloration in dead teeth and less bulging fillings in buccal cavities.

It is the leak that does the damage. Stop the leak and you are pretty sure of success.

Comments on Dr. Phillips's Paper.

BY DR. WM. CASS GRAYSTON, Scarborough, England.

The method of pressure anæsthesia and immediate filling without removal of pulp tissue from roots described by Dr. T. S. Phillips in *ITEMS OF INTEREST*, May, 1904, is very interesting. The formula for pressure anæsthesia has given me surprising results as to its rapidity and excellence in the cases in which I have used it. In some I find it takes longer time than the writer of the article mentions. I have used immediately afterward a mummifying paste composed of paraform, oil of cloves, thymol and oxide of zinc, with the result that in the majority of cases disagreeable pain followed for about twenty-four hours. Then it disappeared and everything was apparently satisfactory. Dr. Phillips does not mention the formula of the mummifying paste he uses. He merely says he uses a dry preparation of his own. As the elimination of pain, as the result of the application of a mummifying agent, is of some importance, and as Dr. Phillips does not use arsenic, I think it would be very useful if he would state what his mummifying paste is composed of, and if it is followed by pain. I have used mummifying pastes after application of arsenic for nearly ten years and am completely satisfied with the results. If mummifying paste or a mummifying preparation can be successfully and painlessly used after pressure anæsthesia, this will be a further advance for which we should be very grateful.

The Value of Pheno-Bromate in the Practice of Dentistry.

BY DR. ADOLPH A. KAYSER, New York, N. Y.

It may be conceded that it is injudicious, and possibly unethical, to refer, to any new or particular product, but there are times and conditions when a professional man should disregard such feelings, and for the sake of suffering humanity, as well as for the benefit of his professional brethren, step aside from the beaten track and proclaim without fear the merits of an article which he has carefully and satisfactorily tested. Were this not done from time to time we would still be groping in darkness and dentistry would suffer, or rather it would not have the valuable adjuncts it now has.

Possessed of such sentiments I therefore make no apology for acquainting you with my experience with pheno-bromate.

You are well aware of the fact that in our professional work we are in contact daily with conditions of pain; you are also aware that it is our first duty and endeavor to relieve this condition as speedily as possible,

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but to do so without depressing the action of the heart. We, therefore, like the drowning man, grasp at a straw in the hope of finding "a something" that will do the work required.

The utilization of the coal-tar derivatives by the dental profession, for their sedative, analgesic and antipyretic properties, has been attended with dissatisfaction in many instances because of their unreliability and of the unfavorable symptoms produced. In certain cases the superiority of this class of agents to those formerly employed is recognized, and has created a desire for a coal-tar product, or some other agent, that will be uniformly potent and free of heart depression or other objectionable feature.

It affords me much pleasure to relate my experience with pheno-bromate, which was presented to my attention about a year ago. This product was represented to be a perfected synthetic combination of the derivatives of the phenatidin and bromine groups, a reliable agent for the prompt relief of pain in every form, and, best of all, absolutely non-depressant. Although quite skeptical regarding the merits claimed I felt, because of the high medical indorsements it had received, if for no other reason, I ought to give the product an unbiased trial.

I will not tire you with unnecessary minor conditions and cases in which I employed this valuable product, but trust it will be sufficient for me to say that the results I achieved by its use were most highly satisfactory; in fact, so impressed did I become with it that I determined to use it in several special cases under my care at the time, and with your kind attention I will report a few cases showing the action and value of pheno-bromate.

Cases for Practice **Case 1.**

Mr. H., aged thirty-one, clerk, presented himself at my office with right side of his face greatly swollen. He complained of excruciating pain and stated he had not slept for several nights. Examination revealed a fully developed abscess which I lanced and treated. Before patient left office I gave him 15 grains of pheno-bromate, with instructions to take 15 grains more in an hour and a half if pain were not relieved. I fully expected to be called again that night. I was surprised to learn next morning that when patient reached home pain had been almost entirely relieved; that no second dose was necessary; that he fell into a natural slumber, and that the pain did not recur next day. Since then he has had two abscesses, but up to time of lancing he suffered absolutely no pain, due to the soothing influence of pheno-bromate I instructed him to take during the formation of the abscess.

Case 2.

Miss K., age twenty-two, complained of terrible pain which she ascribed to tooothache, and that she could not eat or sleep. As there was no swelling of

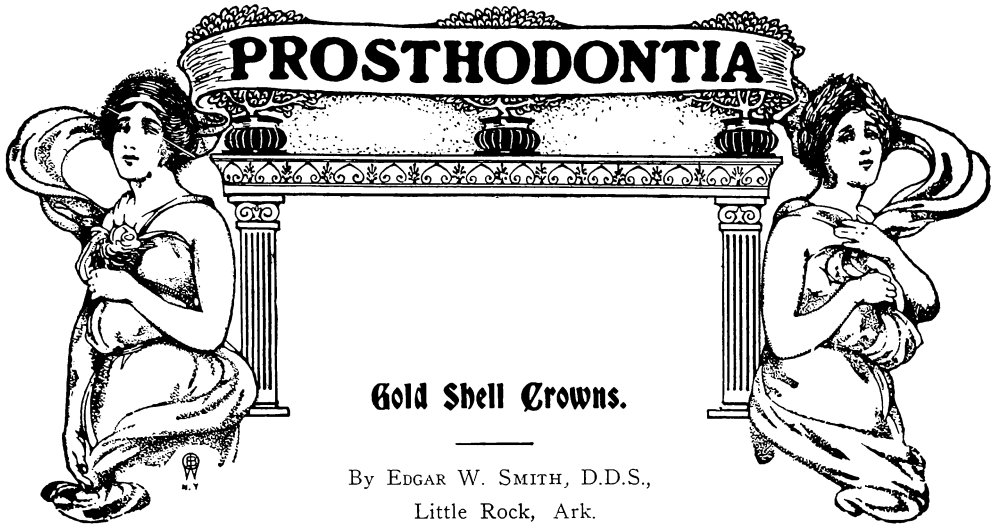
the face noticeable, and examination revealed no decay of teeth or abscess, I diagnosed the case as neuralgia and prescribed 15 grains of pheno-bromate, which she took at the office, with instructions to take 15 grains more an hour and a half later. She returned to the office three hours later, saying: "The pain is all gone, Doctor, please give me some more of those tablets; they did me so much good." In connection with this case I may state the patient was a nervous, weak-looking young woman; yet upon examining the heart I found absolutely no depression.

Case 3. Mrs. P., aged forty, consulted me and was informed she needed four fillings. She declared she was too nervous to undergo such an operation, and that the mere thought of the chair was enough to distract her. After some persuasion she consented to make an appointment, but when she appeared at my office at the stated time I still found her too nervous to begin the fillings. I gave her 10 grains of pheno-bromate in powder form, and requested her to sit down and read for a while. Twenty minutes afterward I was surprised to find that a great change had taken place, that there was no sign of nervousness, and I proceeded with my work, operating close to exposed pulp, apparently causing the patient no discomfiture or pain.

The important feature of this case is the valuable discovery that pheno-bromate can be employed in just such cases to enable the operator to promptly proceed with his work without the tedious task of coaxing the patient into the chair, and to assure the patient practical immunity from pain. Thus much valuable time is saved, and the strain of nerves of both operator and patient is avoided.

In conclusion I would state I have employed pheno-bromate in many cases where a weak heart was indicated, without once finding a case of depression or any physical discomfiture caused the patient by its administration, and have always obtained results desired, and that its marked sedative action is without hypnotic effects. For these reasons it affords me sincere pleasure to recommend this product to my fellow-practitioners, and feel that in so doing I am presenting to their attention an agent of especial value to the dental profession, and one which, properly administered, will never disappoint them.

The powder is preferable to the tablet form where speedy action is desired, as the powder is assimilated in much less time than are the tablets. When it is desired, for any reason, to employ the tablets, they ought to be crushed first. In all cases, whether powder or tablets be used, the administration should be accompanied with, or followed by a copious draught of water.



Read before the Arkansas State Dental Society at Texarkana, Ark., May 23, 1905.

The first question that confronts us in considering this subject is, What teeth require this class of substitutes known as gold shell crowns? First. Posterior teeth which are decayed to such an extent that a filling will no longer hold. Second. Posterior teeth which we wish to use as abutments or piers in bridge-work. It is also necessary sometimes to crown mal-formed teeth. It is never necessary to put this sort of crown on any of the anterior teeth. Let us not be persuaded to do this.

An Ideal Crown.

What constitutes the ideal gold crown? It should fit at the neck of the tooth. It should extend under the free margin of the gum without infringing on the soft tissues. It should have contact points with its neighboring teeth. And lastly it should have perfect articulation with opposing teeth. To obtain these ideal results, in the simplest manner, inflicting as little pain as possible, is what we should all strive to accomplish. This has been a problem with many of us. We are still looking for new ideas on this subject. However, the following method seems to be free from more objectionable features than any yet tried.

Technique for Gold Shell Crown.

Suppose we crown a lower first molar on the left side. The first step is to grind off the distal surface of the tooth with a separating disk, removing the bell-shape portion of that surface. Do the same to the mesial surface, leaving our tooth narrower mesio-distally at the occlusal plane than at the gingival (Fig. 1). This can usually be done very easily because if the tooth is so decayed as to

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require a crown there are large cavities on these two surfaces to start with. Take a wire measurement of the tooth at the neck, and a compound bite and impression, using the little bite impression tray made for that purpose (Fig. 2). Dismiss your patient, telling her to come prepared to get the crown next time. This part of the operation requires about fifteen minutes usually. From the bite secure plaster models mounted on articulator. Saw out the plaster tooth to be crowned (Fig. 3). Trim away as much of the plaster, representing the gum around this tooth, as

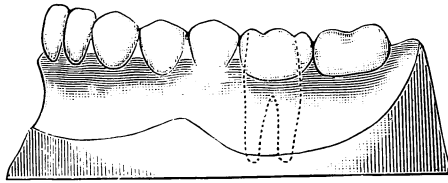


Fig. 1.

you wish the band to extend under the gum (Fig. 4). Dust a little soapstone on the plaster tooth and press it into a block of mouldine, and from this impression secure a metal die. At this point try on the wire measurement, and if the metal die is too large trim it down so that the wire just fits on, and you are sure it is just the size of the natural tooth. Cut a piece of gold plate the desired width, making it a little longer than the measurement. Bevel the two ends to be united and bend them together

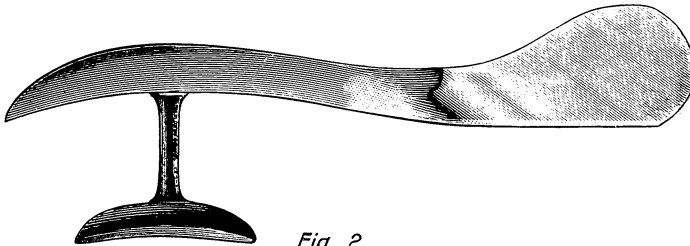


Fig. 2.

so that they fit in place, just making up for the additional length of the gold. Sweat these two ends together over a bunsen burner and you have a seamless band the exact dimension of the measurement. With contouring pliers bulge that portion of the band representing the lingual and buccal surfaces. Try to slip the band over the metal die, not using much force. In a good many cases it will slip over, but sometimes it is necessary to file the metal tooth a little. Notice just where you have to file,

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and when the patient returns, grind the tooth at just the same place. It is surprising how many cases you will find that will require no grinding or filing of the buccal and lingual surfaces at all. Slip the band down until it touches the cervix at one place and with a pair of sharp pointed dividers scribe the band all around with one point at the cervix and the other on the band. Trim the band to the mark thus made and complete the fitting of it with pliers and riveting hammer. Replace the band on the plaster tooth and with a little wax secure plaster tooth to its former

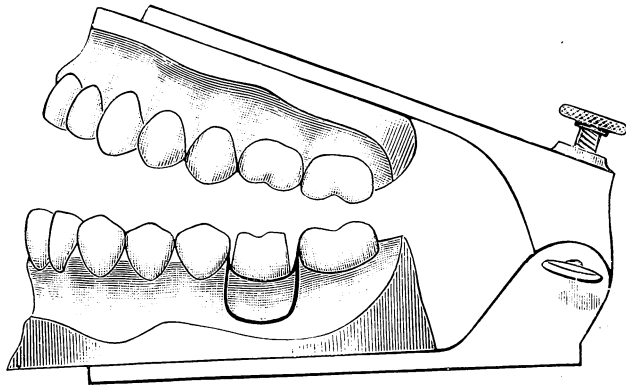


Fig. 3.

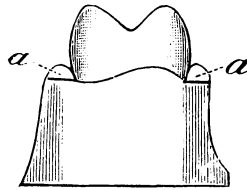


Fig. 4.

position on articulator. Notice contact points; if any further contouring is needed do it now. Fill the occlusal part of the band with plaster and carve the cusps. Soften a little block of dental-lac inclosed in metal ring and in it secure impression of the plaster cusps. Into this counter-die swage the cusps. Solder the cusps to the band with 20 K. solder and reinforce them with 18 K. solder, then finish and polish.

When the patient returns grind off the cusps of the natural tooth to give room for the reinforcement of solder. And if it was necessary to file the metal die to slip the band on, grind the tooth at that place just as

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much as the die was filed. Set the crown in the usual manner. This second sitting requires from fifteen to twenty-five minutes. The patient has suffered practically no inconvenience. The crown was made at odd times during the day and best of all, if followed in detail, the crown is as near perfect as it is possible to make one.

It has probably been noticed that very little grinding of the tooth has been done. In a great many cases, especially lower teeth, a perfect fitting band can be put on without grinding the lingual or buccal surfaces at all. Do not be afraid to grind all that is necessary, but the number of cases where it is not necessary is surprising. It largely depends on how you slip the band on the tooth. On the lower teeth put the lingual side of the band to place first, and using it as a pivot describe an arc with the buccal part, and it will be found that it just follows the natural curve of the buccal surface and comes right to place. In upper teeth the movement is just the reverse.

Porcelain Jacket Crowns.

By JULES J. SARRAZIN, D.D.S., New Orleans, La.

Read before the Louisiana Chapter of the Interstate Dental Fraternity, May 19, 1905.

Very little of the technique described in this paper is original, but the little there may be, may also be of some usefulness.

A porcelain jacket crown seems at first sight to offer dangers which remind one of those encountered between "the devil and the deep blue sea." Ordinarily, a platinum metal cap will result either in labio-gingival, porcelain being too thin to be safe or allow good shading, or an all porcelain jacket with no metal cap will invite lingual fracture on account of a thin porcelain layer being offered to the impact of lower incisal edges. With little originality the method described borrows what appears to be the best points of both preceding systems, giving a strong labio-gingival porcelain wall, the color of which is produced by a facing, while lower incisal occlusion is borne by either platinum alone or by thick porcelain, and the pins of the facing are reliably soldered to the platinum cap instead of depending on porcelain adhesion to retain it.

We will preferably take an unfavorable case for illustration, one in which a large pulp has to be both avoided and protected, Figs. 1 and 2.

Trim the natural crowns to dotted lines in Figs. 1 and 2. Remove all cervical enamel. Make a No. 30 gauge copper tube, Fig. 3, a little longer than the stump and with a tight cervical fit. Instead of cutting

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a shoulder all around the gingival lines of the stump, as would be done in porcelain jacket work without a metal base, cut a well defined one in the gingivo-labial cervix only, $\frac{1}{40}$ inch beyond the gum's free margin. Fig. 4.

All the stump trimming is made painless by the dentinal tubuli pressure anaesthesia process, and the stump is cauterized with silver nitrate as soon as its trimming is completed, preventing chemical and thermal irritation now and later. Add that final crown mounting will be done with gutta percha, and the protection and preservation of pulp life is safely assured.

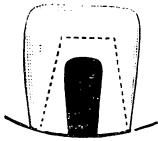


Fig. 1.

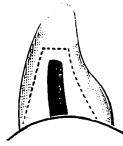


Fig. 2.



Fig. 3.

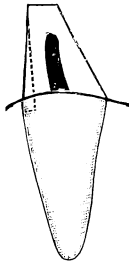


Fig. 4.



Fig. 5.

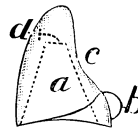


Fig. 6.

The copper tube, Fig. 3, now comes into play. It was made before cutting a labio-gingival shoulder, (Fig. 4 dotted lines), to obtain a tight cervical fit. Now, with the copper tube full of soft plaster or modelling compound, and with the thumb compressing it, take an impression of the stump. A snugly fitting platinum cap, No. 32 gauge, will now be made. It may be either burnished in carefully divided flaps to an amalgam stump made from the modeling compound impression, and the flaps gold-platinum soldered afterwards, or it may be swaged to a fusible metal die made from the plaster-impression. Try in the mouth and perfect adjustment. Reinforce the cap lingually (dotted line at C, Fig. 6) to offer wearing material against the shearing action of lower incisal edges. No. 30 platinum plate, gold platinum soldered, will usually be

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found quite sufficient, and the inevitable grinding will have made space for its correct burnishing, or swageing and soldering. In case we be making a crown, a basal ridge is usually a necessity for perfect occlusion, or in the case of a bridge, to join abutments with other dummy supports. A half round irridio-platinum wire, about No. 13 gauge, will be used (b, Fig. 6), always sparingly gold-platinum soldered.

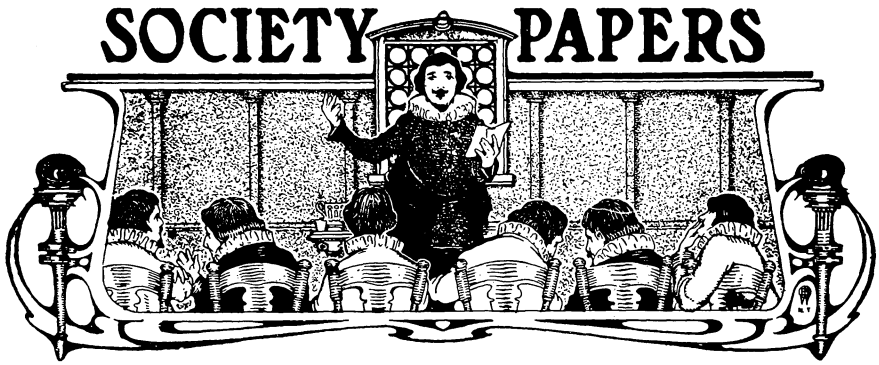
Fig. 5 illustrates the fact that by cutting the labio-gingival shoulder, as above explained, there will be room cervically for a thin facing being ground to the platinum cap, giving certainty of coloring and of porcelain not peeling off anywhere, obviating this danger where it is greatest, namely, at the gingival line. The pins of facing are bent and gold-platinum soldered (dotted lines, d, Fig. 6), giving the porcelain strong reliable attachment, while not weakening it. The No. 30 gauge platinum reinforcement at C, Fig. 6, has been extended, as illustrated, beyond the morsal end of the platinum cap, to form a short sustaining shoulder to receive the porcelain, and at the same time to farther protect it against normal lower incisal strain.

The relations between porcelain and the platinum cap are illustrated in figure 6, where "a" shows the over-lap of the metal cap by the porcelain. It will be noticed at a glance that the construction sacrifices strength in neither, while offering the greatest possible degree of functional resistance to both normal use and abuse.

This system will tend to bring the labial faces of porcelain crowns a trifle more labially than those of the natural teeth which they replace, but the difference is so slight as to be neither noticeable nor important in normal cases, amounting to no more than a $1/40$ of an inch, and very frequently to less.

This description, as will have been inferred, applies to upper anterior teeth, but is in no wise limited thereto. Individual ingenuity will suggest the slight departures which may be necessary elsewhere, say for bicuspids, while, in the case of lower incisors, the absence of lingual occlusion and conditions of single crowns or bridging will of themselves suggest the necessary variations to the prosthodontist.





A New Adjustable Interdental Splint.

By DR. W. H. BENTLEY, JR.

*Read before the Second District Dental Society of the State of New York,
March 13th, 1905.*

The treatment of fractures of the inferior maxilla do not perhaps present as many points of interest to the general dental practitioner as do those operations of a more every-day occurrence. However, to those who specialize and are in any way connected with oral surgery clinical practice, I wish to call attention to the Rabell adjustable interdental splint, devised by Dr. Charles Francis Rabell, Superintendent of the prosthetic department of the New York College of Dentistry, which has met a long needed want in the treatment of jaw fractures and which I think is in point of perfection far in advance of any interdental splint in use at the present time.

In the many cases which I have treated, the interdental splint has been the one most used as it gave the best results; of course, the metallic and cap varieties have their uses and are invaluable; also the wire and many others which might be mentioned.

As before stated, the interdental splint has been found most practical for the majority of cases which came to the clinic, yet did not meet all the requirements aiming towards not only perfect results, but comfort to the patient who is necessarily made very uncomfortable during his course of treatment.

Some time ago Dr. Rabell suggested an interdental splint, which, while answering all the requirements of the old splint, was neat, light,

comfortable for the patient and as hygienic as is possible under the existing circumstances.

Often cases present where the lesion has taken place some time previous to the time when the patient applies for treatment and the muscles have become contracted so as not to allow the mouth to be opened to any extent. In these cases the best results have been obtained where the bite has been raised sufficiently to put the muscles upon the stretch, but through the contraction of the muscles the mouth can be opened hardly enough to take

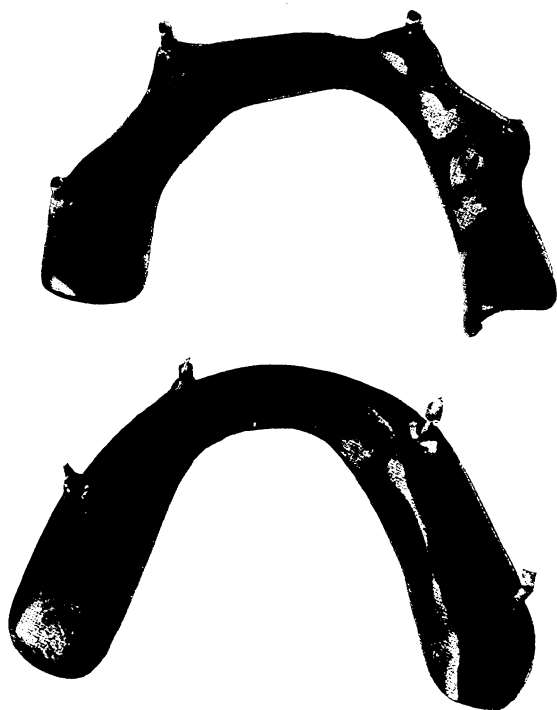


Fig. 1.

the proper impressions, and wedging must be resorted to, in order to make it possible to place the splint in position. Of course during the wedging and relaxing of the muscles the patient is without the splint. This has been overcome by making the splint adjustable, that is, allowing the bite to be raised a little from day to day *with the splint in the mouth*. The technique is as follows:

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The Rabell Splint Described.

The impressions are taken in the usual manner, models made and any displacement readjusted, and models placed on the articulator. Tin foil sixty gauge is then burnished on both the upper and lower models, a surplus of a half inch being left to project beyond the gingival margin. Base plate of one thickness is then placed on this and pressed closely to the teeth conforming to the contour of the gums. The bite is then slightly raised. German silver wire is threaded with nuts to fit, and tubing of the same metal selected large enough to pass over the threaded wire, thus making a jack-screw.

The tubes are placed vertically on the buccal side, one at the point of fracture and three more dividing the arch into several segments. The length of the tubes is governed by the height to which the bite is raised, although on the lower they may be left to project below the gum line. Care should be taken to groove or roughen the tubes thoroughly where they are imbedded in the wax to afford a secure hold in the vulcanized rub-



Fig. 2.

ber. A flange of German silver may be soldered on the posts giving even a greater hold in the rubber.

The reason for the projection below the gums will now be seen. The threaded wire is placed in the tubes running its entire length, enough being left above the tubes for the nuts and anchorage in the wax on the upper model. We are now ready for investing, which is done in two flasks, the upper in one and the lower in the other. (Fig. 1.) The plaster is allowed to cover the surplus tin foil to the edge of the wax in the first half of the investment; the other side is then poured. In this manner the tubes and threaded bars separate on the opposite sides of the flasks, and by the usual method the cases are packed and vulcanized.

After placing the splint in the mouth and the bite has been slightly raised, those parts of the tubes which project below the gum line can be cut away even with the rubber. It will be seen that by doing this, greater length is afforded the parts, and at the same time they are given protection in the investment.

The Angle improved jack-screw "J," may be used, thus saving the process of preparing the tubes, threaded bars, etc. Fig. 2 shows the splint complete.

In some cases I have found the muscular pressure moved the nuts and so had to use one extra as a lock on each post. The splint may be made with stationary stilts or posts, using the tubing alone, but here we are not able to raise the bite—one of the chief objects we have endeavored to attain. It will now be seen that instead of the all rubber interdental splint, solid and more or less bulky, we have a light splint which enables the patient to eat and drink much more easily, to say nothing of the possibilities of keeping the mouth aseptic as compared with others. As Dr. Henry C. Boenning, writing in the June, 1904, *Cosmos* on "Some Views of Fractures of the Lower Jaw" states, "Another objection to splints in the mouth is that they interfere with mouth sanitation."

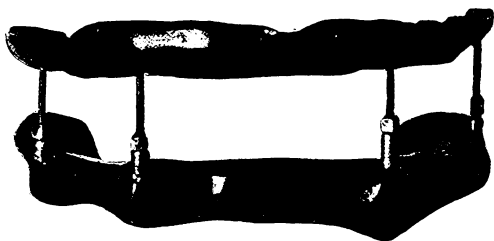


Fig. 3.

In vulcanizing black rubber in such quantities as is required in the ordinary interdental splint, even with the greatest care exercised, often it proves to be porous. This is entirely obviated.

With the splint in position and the bite slightly raised the Barton bandage is used, but after a week or ten days the bandage may be abandoned and the splint raised to its highest position. (Fig. 3.) The muscles becoming tense the jaw will be held firmly in the splint by the muscular force exerted, and after a fibrous union is obtained the splint can be removed, the upper part discarded entirely and the tubes sawed from the lower section which may then be cemented in position and used as a *cap splint* until the patient is discharged. With this splint the patient can talk extremely well and I have often had them pronounce such words as "Philadelphia" and "Schenectady" quite satisfactorily.

I have given the splint a thorough trial on many patients and have found it to answer all the requirements.



Interesting Case of Necrosis.

By DR. J. P. RUYL, Brooklyn, N. Y.

Read before the Second District Dental Society, March, 1905.

A little patient came to me when he was six years old. Previous to this, nine months perhaps, he contracted diphtheria, but was otherwise a perfectly healthy child. Antitoxin was used. After recovery he was vaccinated and from that time, ill health began. In about two months he had convulsions with pains and swelling of the gums and was treated for ulceration of the gums for about six months with no benefit, the swelling continuing until the whole face, almost to the clavicle and back to the ears was involved, the left side being worse, with one eye closed. The parents then employed another physician who brought him to me.

His temperature was $103\frac{3}{4}$ and pulse 134. He appeared stupid. There was profuse salivation and extreme odor. The case acted like salulitus. Several teeth had dropped out, some had been extracted and more were loose. I removed three molars and some particles of loose process. After this, the gums did not heal and there was discharge from the exposed process. An abscess appeared under the left mental process. He then went to a hospital where he underwent an operation lasting three hours, in which the left side of the neck was opened along the jaw from the mental foramen to the angle, the outer table of the jaw was removed in flakes and at the angle a piece of bone one inch square and one-eighth of an inch thick, which was black. Most of the coronoid process came away black and was pulled out with forceps.

Two months later, the same man operated again on the right side where there had appeared another discharging abscess. This side was opened along the border of the jaw bone, some pieces of the outer table were removed, and the posterior part of the ramus up to the condyloid process. This was all black, surrounded by pus and came away readily, being pulled out with tweezers. A dentist was present and assisted with the chisel in removing most of the permanent molars, some process and a portion of the coronoid process.

Both the surgeon and dentist who operated said that he would be better off dead and almost hoped he would die on the table. They stated that the removal of the entire lower jaw would be necessary for the recovery of the patient. He left the hospital and after being treated medically for four months, during which time there were discharging abscesses on both sides, he came to me again and I operated, removing from both sides every particle of process, a flake of the outer table of the

jaw its entire length, and every remaining undeveloped permanent tooth except two incisors, the process around which seemed perfectly healthy. Those teeth I removed were riding in little sockets of pus and were easily lifted out with the tweezers.

After this operation his general health improved, the temperature dropping in three days to 99 4-5 and pulse to 108. Everything healed except a fistula on the left side from which for a time there was a discharge of thin, curdy pus and an occasional spicula of bone. The swelling gradually disappeared and in two or three months the fistula closed and I made him a plate which he now uses to advantage.

The causes might be due to animal poisoning or scrofulus diathesis, complicated by vaccination or mercurial poisoning, although some medical authorities say it is not possible to salivate a child, while others claim that salivation might show months and sometimes a year later and it might have been brought on in this case. There is no history of syphilis in the family; both parents are healthy. The mother had six children and no miscarriages. A brother and two sisters are living and healthy, two brothers having died with diphtheria at the time when this boy was sick.

The Administration of Nitrous Oxide Gas in Dental and General Surgery.

By C. J. MAPP, D.D.S.

Read before the Second District Dental Society, March, 1905.

A great deal has been said and written in regard to the administration of nitrous oxide gas for minor and major operations in dental and general surgery. I shall speak of my own experience with the agent and give some practical points which are the result of observation during that experience.

In the first place it is absolutely necessary that the apparatus be in perfect order. If the gasometer is used in office work it should be very nearly evenly balanced, if a large one, with the slight difference in favor of the outgoing gas. This slight pressure assists materially when the patient is a young child or an older person who is a light breather.

The weight of the container in a small gasometer gives all the pressure necessary. I do not claim that this pressure is requisite, because when the rubber bag is used you do not have it; but I have found it of advantage.

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I prefer the gasometer to the rubber bag for office use, and one of forty or more gallons, to the smaller ones that contain only eight or ten gallons.

With the larger gasometer you are always prepared to renew the gas in case of recovery before you have finished your extraction. We are obliged to use the rubber bag for outside work as nobody could carry around a gasometer—and there would be the disadvantage of limited capacity if he could.

When the bag is used it should be without leaks and so arranged that the end where the gas enters the tube cannot become twisted, thus cutting off or limiting the supply of gas. I use a short piece of stiff rubber tubing pushed into the silk-covered tubing and extending into the neck of the bag. The tubing should be tested frequently for leaks, by closing one end and blowing through the other. It is false economy to use leaky bag or tubing.

I confess to a decided preference for a stiff face piece. The inflated edge face pieces in general use are good in ordinary cases, but in lengthy operations or where the patient is uneasy and tries to avoid the gas, as with alcoholics and very young children, the stiff face piece can be held more firmly—and results obtained more certainly. The inhalers fitted with mica or aluminum disc valves are to be preferred to those having springs in the valves, as the accidental fall of the inhaler having mica discs does not injure it and put it out of business—as once happened to me during a major operation. Where the patient has a full beard, wetting the inside of the face piece with water assists in excluding the atmospheric air. The old-fashioned tube stuck between the lips, and the nose pinched, is very uncomfortable for the patient and the same results may be obtained with the face piece by giving a few seconds more time to the administration.

Dental Office Work.

The extraction of from one to seven or eight teeth under gas, is a very easy matter if done carefully. A little carelessness spoils everything. Be sure the patient is anesthetized thoroughly before beginning to operate. Do not depend at all on any sign given by the patient, such as letting the hand fall. The hand will sometimes fall when he is still partially conscious, and if you commence your work it is just then that the same hand is apt to rise suddenly and give you a stiff punch in the jaw. The safest test is to touch the eye with the finger. If there is no response your patient will not feel you when you begin. Even in this test, however, be sure the patient has not a glass eye. They sometimes have, and you do not discover it until you make a mistake.

If a tooth breaks off at the first trial, continue with that tooth and get out the remainder of it before passing to the next one. It makes a mess of the operation to have to return to a broken tooth or root. If the work is not finished before the patient begins to recover consciousness, apply the face piece again, holding the patient's head forward to keep the blood from the throat. By raising the face piece and tipping the head further forward as the patient exhales, the blood will run out on napkins placed over a rubber bib or apron adjusted to protect the clothing.

A good assistant to sponge off the bleeding gums, hold the inhaler, cuspidor, etc., is invaluable.

The gas can be renewed in this way as often as is necessary without the patient being conscious of but one application. When you consider that patients are kept anesthetized with gas for from one to two hours, or more, continuously, breathing two or three hundred gallons, the idea held by so many practitioners and patients that gas cannot be administered twice or three times, or more, at the same sitting or in one day, loses its standing.

I mentioned one to eight teeth for one administration. That is an ordinary case. No two cases are alike. The conditions must be the guide. I have removed twenty-eight teeth under one administration of gas—loose, diseased teeth, of course; on the other hand, I have renewed the gas four or five times on one tooth, endeavoring to coax it out without breaking, or digging and spearing for an elusive root.

General Surgery.

But I started out principally to give some points on the administration of gas for minor and major surgical operations.

I have a record of several hundred cases in Brooklyn and vicinity and a great many in Manhattan while associated with Dr. Hasbrouck. The period of anesthesia lasted from two minutes to two hours, and in one instance two hours and twenty minutes, owing to unforeseen complications. I have never had a death under gas but once, and in that case a young man was dying from septicemia when the operation (undertaken at the request of the family as a last resort) was commenced. He was under gas forty minutes when the heart and respiration stopped simultaneously. The gas was in no sense responsible for the result, as the condition of the patient warranted us in expecting it to occur at any moment.

Among the operations consuming ten minutes or less are: Divulsion of sphincter ani, removal of toe nail, opening abscesses, opening tear duct, infected finger, removal of tonsils, puncturing ear drum, adenoids, dressing wounds, carbuncle, moving stiff joints, antrum, passing sounds for stricture, bristle from tooth brush behind tonsil, empyema, adhesions

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after circumcision, vaginal examinations, tumors and curetting, removal of moles, etc.

Others requiring more time: Abdominal tumor, one hour and ten minutes, female, 65 years; tumor in back, 45 minutes; mastoid abscess, forty-five minutes, patient a male and an alcoholic, 74 years old and altogether unpromising for anesthesia; abdominal cancer, one hour; abscess, twenty minutes, for boy of nine years. Another abdominal cancer case was a short operation, ten or fifteen minutes, but the abdomen was filled with fluid which had pushed the heart over to the right side of the body. We have had tuberculosed epididymus, laparotomies, appendicitis, hemorrhoids, varicocele, amputation of legs, arms and fingers, etc.

My youngest patient was two years and three months old. He was circumcised in twenty minutes.

I had to cut down one of the stiff hoods to get a face piece to fit him. This little fellow squirmed and howled all through the work, but when it was finished said he had felt no pain and asked for a glass of milk. It is characteristic of very young children that they cry out and move around under prolonged gas anesthesia. When this is explained beforehand it does not distress those who hear it.

**Gas Administered
Through
Tracheotomy Tube.**

The most important case is one in which Dr. A. T. Bristow, of Brooklyn, removed the larynx from a male patient who was afflicted with cancer of that organ. It was done at the Long Island College Hospital, where the patient was prepared for the operation. Tracheotomy had been performed a week or two before, and to the tracheal tube then inserted, I adjusted a rubber tube with thick walls to prevent it from collapsing during inhalation, and attached to this rubber tube a metal one that had been passed through a rubber cork screwed into the inhaler with the face piece removed. The patient took the gas through the tracheal tube one hour and forty minutes without the slightest interruption. Two minutes after the gas was stopped, the patient recovered consciousness and in answer to a question, nodded that he had experienced no discomfort from pain. The man made a good recovery, has never had a recurrence of his affliction, and only a short time ago, Dr. Bristow informed me that the patient was earning his living as an expressman. He can talk in a way by closing the tube with his finger and shaping words with his mouth and tongue—all in one guttural sound, of course. This operation is done usually under chloroform and the death rate is extremely high. Dr. Brush, formerly a practicing dentist in this borough, once administered gas for the same operation. I think these cases are the only cases of this character recorded

where gas has been used for anesthesia. In this connection I would say that this is the only case I have ever had where patient has been prepared for anesthesia beforehand.

All others have been emergency cases, and gas was used because other agents were contraindicated.

This being the case it goes to show that nitrous oxide is a safe anesthetic. It would be used much oftener if it were less expensive and more readily handled. It is, undoubtedly, the most difficult anesthetic to handle properly, requiring experience and confidence in it and in oneself. The cost of gas in continuous work is approximately five cents a minute.

**Advantages
and
Disadvantages of Gas.**

The object in thus bringing forward these experiences is to show the wide range of use, and to inform the members of our society as to what is being done with the anesthetic which we look upon as belonging specifically to our profession, and to encourage dentists who use gas in their offices to use it also in surgical cases into which they may be called. Their dental experience will stand them in good stead and with a little practice and some confidence they can add to their income and gain friends and reputation.

There are many advantages in using gas for surgical work, but from the surgeon's standpoint, some disadvantages. The operator cannot work as readily in some cases where it is difficult to keep the patient perfectly quiet and relaxed; and the field in which he is working is dark from the blood discoloration, making differentiation of arteries from veins difficult.

The great advantages of using gas are its absence of nausea and consequent retching—very important in abdominal surgery or as in the laryngectomy—and freedom from anesthetic pneumonia and other after effects of ether and chloroform.

The plan of giving the patient morphine just before the operation, to induce tranquility and relaxation and soothe the after pain, is practical. This lessens the first objection mentioned very materially. The second one may be met by the operator speaking to the anesthetist and the latter admitting air freely, thus clearing up the field at once. A good anatomist, however, never has recourse to this as he knows the condition of his patient all the time. The usual dose of morphine is one-quarter grain with one one-hundredth and fiftieth of atropine.

The ordinary manner of administering a "dose" of gas—that is, the total exclusion of all air—produces a kind of asphyxiation and the gas becomes a true anesthetic only when mixed with atmospheric air or oxygen. And it must be done in proper quantity for the individual patient.

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Practical Work.

In commencing an operation, the chief surgeon tells you when to begin the administration. Endeavor to get the patient to breathe with the mouth open and through the mouth, quietly but freely and fully. Practice this a few inhalations before turning on the gas. When the breathing is satisfactory, admit the gas and also a very little air through the cut off valve. The air will delay the anesthesia a little but a better result is obtained. When the patient is ready, notify the surgeon, who at once begins his work *and should not need to give you or the patient's condition another thought.*

It requires a few minutes to find the patient's "measure" as no two patients take the gas the same or the same quantity. By a little experimenting you will soon arrive at the proper amount of air to admit. *Pay absolutely no attention to the operation.* You are the anesthetist and have no right to watch the operation as you cannot do so and give your patient the attention to which he is entitled. The surgeon will notify you when to stop the anesthetic. One hundred gallons of gas will last from thirty to forty minutes.

If the time of anesthesia is expected to exceed thirty minutes, have a second cylinder ready with a yoke on it, so that you may transfer from the empty one to a full cylinder without loss of time, by changing the small tube at the rear end of the rubber bag from one to the other. This takes but an instant. Let the gas run into the bag slowly, or at about the rate it is breathed. If let out too rapidly the valve is apt to freeze. An easy working valve is desirable. When it sticks and requires both hands and much force to open or close it, you must neglect the patient to obtain a supply of gas. I use cylinders that come from a Western concern for this reason. They are light in weight and this feature is appreciated when they are to be carried about.

Have the cylinders where they can be controlled by whichever hand you may have free. You will stand sometimes on one side, sometimes the other, or at the patient's head, on account of the position in which the operator places the patient for certain work.

In the hospital operating rooms you will have all the help you need, but in private houses you will depend on yourself altogether.

The pulse is watched by a finger placed on the temporal artery as the most convenient. As long as the heart continues to beat regularly, the irregularity of, or total cessation of the respiration is not alarming. It is soon resumed. If the heart goes off and gets feeble, suspend the gas, admitting air freely. The patient begins to recover consciousness and receives a stimulus from the work going on. Resume the gas, saying

nothing about the interruption unless something goes very wrong; then all hands stop and work to one end.

In conclusion I will say that the office experience of the dentist who uses gas ought to give confidence to assume the post of anesthetist on long operations. Always demand a good fee for it, however, for it is hard work.

It would not be the exact truth to state that there is *absolutely* no danger in gas administration, for the condition of the patient must always enter as a factor; but I do say that gas is the safest of anesthetics under all circumstances. The patient's quick return to consciousness where he can assist himself in event of vomiting or respiratory constrictions, is of the greatest value.

How Anæsthetics Act—Especially Ethyl Chloride.

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Because they all are carried by the blood throughout the whole body, all benumbing and hypnotic medicinal agents are systemic anæsthetics regardless of the manner of their introduction. Yet in popular nomenclature, the term "systemic" is applied only to those non-alkaloidal agents which are introduced by way of the lungs. It is to a consideration of these, and especially to only one of them in greater detail, that this essay is directed. The mode of action of one is in general the mode of all.

It may not be amiss to premise the body of this discussion by a brief statement concerning the several factors in the case. With regard to the anæsthetics themselves, it will suffice to call attention to these characteristics. Of their physical properties the one which interests us most is that they possess high degrees of tension; of their chemical properties their strong affinity for fats stands out as a prominent feature. With regard to the body upon which they act, only the blood and the central nervous system need to be referred to specially. Without going too much into detail, it will yet be well to recall that the circulatory system is made up of several diverse elements: the *liquor sanguinis*, the oxygeniferous bodies and the variously clothed endothelium channels; of cognate importance, because virtually the terminal extension of the blood stream is the intercellular lymph. It will be necessary to review the anatomy of the brain, only to notice that the several planes represent, psychologically, vari-

**Factors Involved
in Anæsthesia.**

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ous periods of phylogenetic development; that we can distinguish, for instance, between the highly organized world old automatic centres of the vegetative life, and the easily inco-ordinated cortical centres of the volitional life. Besides this, the so-called white matter, the interstitial neuroglia, is now determined to be more than a mere cement substance or connective tissue, indeed to consist of cells and to be functionally active. Another peculiarity which must not be forgotten is that the brain content is a practically constant quantity: Hyperæmia and anæmia are correlative with a decrease and increase in the quantity of the cerebral plasma in the neural channels, and indicate, besides, a change in the circulatory rate rather than the circulatory volume. And lastly, the most important fact of all, is the presence in the cerebral protoplasm of relatively large quantities of fats, of which cholesterin and lecithin are the two important representatives.

Explanation of Anæsthesia.

So here is the situation: On the one hand a quickly diffusible vapor which easily penetrates cell membranes, and on the other a body peculiarly susceptible to protoplasmic disarrangement. Now, how does the one get into the other and what is the result of their conjunction?

In brief, the anæsthetic agent enters the blood channels through the pulmonary alveolar epithelium, is carried by the blood stream to the brain as well as to the whole body, and by entering into a physical combination with the fats is stored in the organism. By disturbing the equilibrium of the cell contents, if not by actually causing a change of the cell form, the physiological activity of the cell is modified. If the protoplasm is subjected to too great disturbance the cell dies. The cell resumes its normal function when the condition arises, which permits the anæsthetic gas to pass out again into the blood stream and be cast out of the body. Each of these statements will bear amplification.

Anæsthetic vapors pass into the blood from the air in the lungs in just the same way, and for the same reason that oxygen gains entrance into the body. On either side of the membrane of the alveoli there is a different tension of the gases. In the blood the tension of the oxygen is 22.04; in the alveolar air it is 122. Since all the anæsthetic vapors possess a very high tension—that of ethyl chloride, for instance, being given at 139 at 86°—there is a rapid diffusion through the pulmonary membrane, of the anæsthetic into the blood. Tension—that is, the power to spread out—is easily shown when the stopper is taken off a bottle containing ether, or, better yet, by the force of this jet of ethyl chloride as it is liberated. It is a simple experiment to show how gases pass from condition of high tension into lower by compressing unequally a rubber bag containing air; the air from the fuller part at once rushes into the emptier.

Water seeks its own level; gases seek to equalize tension. The vapor passes directly through the cell wall into the blood either by simple osmosis or through the stomata, or because of a direct selective imbibition of the cell itself, or, and most likely, in all these ways. It is taken up by the plasma first and particularly, and by the erythrocytes when the amount circulating in the plasma raises the tension above that of their fluid content—that is, the protoplasmic lymph. As the blood goes on its way through the body the first supply is sent to the brain and through the coronary arteries into the structure of the heart itself; and the first interchange with the tissues occurs there. It is especially in the brain that the blood loses the anæsthetic vapor which it is carrying for the fats of the nervous structures possess of all elements of the body the power of taking up anæsthetic vapor.

The first effect of the anæsthetic upon the ultimate neural element is a mechanical disturbance of its protoplasm, probably a rearrangement of the chromotophores; there follows a further change, in that the protoplasm passes into a condition of coagulation, indeed the first stage of coagulation necrosis—and, as a result of both these effects, the functional activity of the individual cell is inhibited, the co-ordination of related areas becomes destroyed, sensation is abolished and the body suffers a toxic paralysis. At the same time this action is going on in the central nervous apparatus, the peripheral nerve cells are undergoing similar changes and present finally, approximately, the same conditions. There are now no afferent impulses transmitted to the brain to notify it of pain, just as there are no reflex efferent impulses to ward off the operative injury. The sequence of action is from the cortex to the medulla. First the emotional, then the sensational areas are involved, then those of motion, and, last of all, the vital centres governing the circulation and respiration.

The needs of an anæsthesia are only to inhibit the pain, so when that state has been reached, if more of the anæsthetic is given than is necessary to maintain that condition, the surplus is then taken up by and stored in the adipose connective tissues of the whole body. It is only when the system receives an access of its capacity that the sympathetics become paralyzed and the centers in the medulla become overwhelmed. How much vapor can be safely inhaled varies with the peculiar properties of the several agents and would more properly be considered in a detailed discussion of the several anæsthetics.

Theory of Schleich.

There is another view of this subject which is very attractive, but which is not yet generally accepted. If the neurone theory ever becomes established then the notion of Schleich (Berlin) that the

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anæsthetic state depends upon a mechanical separation of the cortical cells will be a brilliant explanation of what is at the best an obscure process. According to Schleich, the brain neuroglia is the active inhibitory element of the brain. The anæmia which is induced by the anæsthetic calls forth a corresponding increase in the quantity of the intercellular lymph, and the neuroglia cells having been stimulated by the primary hyperæmia, push their terminal arborizations between the dendrites of the cells of the gray matter, and, as it were, insulates them. In fact, he terms the neuroglia the brain insulator. As the anæmia progresses the neuroglia becomes paralyzed, and would thus liberate the cortical cells, but these latter have meanwhile been affected by the narcotic action of the anæsthetic agent and are already functionless. The reason why the automatic centers resist longer is because they are more thoroughly insulated. The more external centers of volitional activity are more quickly overcome because they are not so closely surrounded by the neuroglia. There are objections to accepting both views; but on the whole they offer the best explanation which has yet been given and bid fair to be confirmed by the investigations which are now being made.

Let me boil this down once more. The benumbing action of anæsthetics is due to the intoxication of the ultimate neural element by absorption of the gas into the cell protoplasm. The process is a physiological disturbance of the disposition of the fats of the protoplasm by reason of which the functional activity of the cell is temporarily inhibited.

A great deal more might be said about the action of anæsthetic agents upon the blood itself and upon the various organs of the body; about the concentration and dosage; about the productions of asphyxia and syncope; about the influence upon the secretions; about the mode of excretion, and about the several phenomena of an anæsthesia. It would make a very long essay to do that. I have endeavored to confine myself in this part of my paper to their specific action upon the brain itself, and would invite your attention now for some of the other details to a brief consideration of the mode of action of one of these agents—namely, ethyl chloride.

Action of Ethyl Chloride.

Concerning the mode of action of ethyl chloride, observers are agreed in the following particulars: It is rapid, pleasant, comparatively harmless to the heart and without marked sequelæ. Whether or not every individual can be brought under its influence, and concerning the degree to which its effect should be carried there are various opinions. Some conflicting findings have been made as to its action upon the kidneys, and dissimilar conclusions have been drawn regarding contraindications to its employment.

**Rapid Action
of Ethyl Chloride.**

That ethyl chloride is very rapid in its action every one admits, and you will no doubt have an opportunity to see this yourselves this evening in the demonstrations by Dr. Green. Ether is not to be mentioned with it, nor yet chloroform. Methyl chloride is more rapid and ethyl bromide and nitrous oxide gas are but slightly slower. Of course, this is only comparative. I have seen some ether cases which did as well as one could desire, and some ethyl chloride narcoses were slower than others in which N_2O was used. But taking the anæsthetics as a whole in a sufficiently large number of cases to make the tests worth while, it will be found as I have stated. Except one anæsthetic, and that one not generally serviceable, ethyl chloride is the most rapid of all anæsthetics. "It is so rapid as to be uncanny," one surgeon said. In another respect this agent is more than, or not so useful as others. The effect does not last so long by any means as does primary narcosis with either ethyl bromide, ether or chloroform; but it does continue longer than the primary anæsthesia under nitrous oxide gas. You will notice this also for yourselves this evening. It is no unusual case which shows signs of analgesia for two or even three minutes after full anæsthesia was established. Indeed, a writer in the *Nord Medhille* (1903, IX., pl. 49) has seen it continue for twenty minutes—no doubt a very exceptional case. This observation has been made in many series of cases. From a Birmingham, England, hospital a series of seventy-seven dental cases yielded the following figures: Average duration of time to anæsthetize, 50.9 seconds; the longest, 150 seconds, the shortest, 20 seconds. Average duration of time available for operation, 71.3 seconds; the longest, 150 seconds; the shortest, 30 seconds. Hewitt gives the following figures for nitrous oxide ("Anæsthetics and their Administration," 1893, p. 106): Average period of inhalation, 51 seconds; average period of anæsthesia, 42.1 seconds.

The recovery is dependent upon the duration of the anæsthesia and the amount of the anæsthetic used. In any case it is rapid, sometimes after a few breaths, if primory anæsthesia only was induced. The patient is then able to get up and be right about his business. The intellect is perfectly clear and the movements of the body under perfect control. After a longer anæsthesia, there is some lassitude; even then when consciousness has fully returned the intellect is markedly normal.

**Ethyl Chloride
Agreeable.**

Ethyl chloride is pleasant to inhale. The odor is much like chloroform. It is not so easy to breathe it in a strong concentration as is nitrous oxide. I have in mind one rather unpleasant experience of giving it in a strong dose with very little air. The patient simply objected so much that I had to hold her. Yet even such a misuse is not as bad as

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the choking smell of a large dose of ether. When ethyl chloride is given properly diluted, as it should be at first, there is no likelihood that even the most fastidious will object to its odor. It has been found when using Ware's mask that sometimes some of the liquid would pass through the gauze diaphragm, if the stream was too large. I have seen patients shrink because of this. But there is not the least danger from burning as with chloroform; indeed, I once dropped some into my eye without any injury. Ethyl chloride is pleasant, also in this that the patient is really made insensible to pain even if not wholly unconscious. Quite the contrary is occasionally reported of nitrous oxide. It must be a horrible experience to be assumed to be thoroughly anæsthetized when still sensitive to the pain of the operation. One of my students suffered thus while under the influence of somnoforme. Of course, one must know the signs of anæsthesia, else with any agent the operation may be permitted too soon. And while this is one of the greatest dangers in the case of chloroform, and only a matter of unpleasantness in the case of the others, it is indeed a comfort to an anæsthetist to feel that his N_2O patients who have complained of the failure of that agent to overcome what is probably an idiosyncrasy, can be assured that the use of ethyl chloride will relieve them of that possibility. If a limited number of observations can be used as forming a basis for the opinion that on the whole the ethyl chloride dream is usually pleasant, in this particular then also, this agent is pleasant to take.

Yet again ethyl chloride is pleasant to the anæsthetist because the patient's appearance is so little changed. Cyanosis is a very rare attendant symptom. If it is present one can be sure it is due to some mechanical interference with respiration and not as in the case of nitrous oxide to the anæsthetic itself. On the contrary, the face is often seen to be of a brightened color, and I have never seen it become pale. There is evidently some dilation of the cutaneous capillaries of the upper trunk and face. If Girad (Toulon) is warranted in an assumption that this external vascular movement is participated in also by the brain and medulla, it would provoke a comforting optimism that there is little danger of a syncope either from cerebral anæmia or a splanchnic vaso-motor paralysis.

I have not dared to say that ethyl chloride is a safe anæsthetic. There are none absolutely safe. **Ethyl Chloride** safe anæsthetic. There are none absolutely safe. **Comparatively Safe.** Statistics are very unreliable. The personality of the anæsthetist, as well as the method employed, and the condition and susceptibility of the patient as well as the nature of the operation, all are necessary factors in statistics, but very difficult to be sure of. To read the circulars sent out by the manufacturers of these quickly acting agents, one would be led to judge that almost anybody can give them to anybody else without so much as thinking of danger. But such is not the

real state of affairs. Every anæsthesia is a poisoning, which, however, fortunately usually has no serious after-effects and yet which only too sadly and too often ends in the death of the patient. Even nitrous oxide with its wonderfully low mortality rate has contributed its quota. In a recent paper (*Medical News*, May 28, 1904) I took the opportunity of giving the statistics of ethyl chloride. It is hardly possible to make comparisons. Nitrous oxide is the safest of all; thus far ethyl chloride has proven to be next safe. Should we not always be on our guard and feel that each anæsthesia may be liable to a fatal issue, so that we will always be careful to use any agent, *secundum artem*?

Sequelæ.

By the sequelæ I mean the unpleasant taste and persisting odor on the breath and in the hair, the delayed clearness of intellection, the heaviness, lassitude or wakness, the mental disturbances, the nausea and vomiting which are seen often after anæsthesia. After short operations any of these is very rarely present. When more than 10 c.c. have been used there may be some disturbance of the stomach. After longer operations even there is less tendency to vomit than after either ether or chloroform, but more than when nitrous oxide was employed. In any case, if there is any, it is slight and transient. There is no secretion of mucus, so aspiration pneumonias need not be feared because of that.

Effect on the Heart.

When employed only for primary anæsthesia the effect of ethyl chloride upon the heart and kidneys need not be considered. The action of the anæsthetic is so ephemeral that no opportunity has been given to affect these organs. What occurs, though, during a longer anæsthesia, is well worthy of notice. Cinical and experimental evidence is at variance. Personally I have never observed any dangerous symptoms. Ware (New York), Rose (Bristol, England) and others have had a like experience. Yet Wood (University of Pennsylvania) in 1892 wrote to the *Dental Cosmos* that there is always a fall of the blood pressure due to a direct depression of the heart. But he based his opinion solely upon concentrated and suffocating doses given to dogs, and induced some of the anæsthesias even by injecting the ethyl chloride directly into the jugular vein. If we followed his method with the human subject we might have to adopt his view. Twenty-two out of twenty-four sphygmomanometric tracings from the human subject made by Molherbe also showed some arterial depressions. A writer in the *Lyon Med.* (1903, p. 47 *et seq.*) found that section of the vagi relieved some heart depressions which he observed. Girard (Toulon), on the contrary, is strongly of the opinion that the vagus is not stimulated, but is really inhibited. I have used ethyl chloride for over half an hour in several cases whose condi-

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tion was very bad, without any kind of unfavorable symptom. There is a report in the *Bristol Med. Chir. Journal*, March, 1902, of four successful anæsthesias in the case of a woman whose heart sounds were obscured by a loud double mitral murmur. Hacker (Innsbruck) has not found ethyl chloride to act unfavorably even in a case of fatty heart. But diseased myocardia are not to be trifled with. I would be extra careful with any patient who showed any disease of the heart muscle.

Effect on the Kidneys.

So also concerning diseased kidneys. Gaudiani (Il Policlinico, 1902-3, IX. sez. Prat., p. 385) and some others have found albumin after long operations. Dumont (*Handbuch der Anæsthesie*, 1903, p. 92) quotes Konig (Bern) as failing to find albumin in all of his cases. Several other authors might be quoted whose uroscopics also resulted negatively. For my own part I am convinced that for short operations ethyl chloride is without danger even to patients having diseased kidneys, and that even in longer operations the danger is very much less than after chloroform and ether, and no greater than after nitrous oxide (see Buxton, p. 89).

Failures.

The question has often been asked whether ethyl chloride never fails to anæsthetize. My own experience is very similar to that of McCardie (Birmingham), who had some failures while he used an open method, but says he is able to anæsthetize any one, even an alcoholic, with a bag inhaler. I failed on several occasions when I first began to use ethyl chloride. But this was so evidently due to a faulty method that I am now confident to be able to manage all cases. I am referring now to full surgical anæsthesia, in which there is complete relaxation. Of course, some take longer time than others and consume more of the agent. Alcoholics and neurotics are bad subjects. The very obese are not easy to manage. How much will be given to compel muscular relaxation will depend upon the skill of the anæsthetist. He must know how much he dare give and how far he may push the anæsthesia. I have found it good practice to use both the open and the closed methods—the one or the other, according to the necessities or possibilities of the case. It must not be forgotten that complete muscular relaxation is not by any means necessary for slight operations. I have repeatedly had patients make repelling motions, or be quite rigid, during an operation who yet afterward were entirely ignorant both of their movements and of any pain due to the operation.

Neither age nor sex contraindicates its use. I almost dare to say that no condition of health contraindicates its use. If an anæsthetic can be given, or must be given, I would feel safer than with any other, except alone

nitrous oxide gas combined with oxygen. Neither pregnancy, phthisis, hemorrhage, dyspnœa, valvular heart lesions, debility, fever nor mental shock have been found to be contraindications. Ethyl chloride will do everything that nitrous oxide will do, and is more suitable for some cases than either chloroform or ether.

I fear that I have trespassed upon your indulgent patience. Yet, although the demonstrations this evening will show you the objective phenomena of the anæsthesia, I beg your kindly forbearance for a few minutes longer that I may conclude my essay by referring very briefly to the course of the anæsthesia and to the methods of using ethyl chloride.

**Method of Using
Ethyl Chloride.**

The signs of anæsthesia follow one another so rapidly that it is only by observing many cases that one can form, as it were, a composite picture of their sequence. Usually the first sign is an increasing depth of the respiration culminating in a soft snore. While that is going on, or perhaps, first of all, if the patient opens the eyes the pupils will be seen to be moderately dilated. If there is opportunity to take the pulse it will in most cases be found to be slightly accelerated. There is some slight flushing of the face. A nervous patient will probably make a few purposeless movements or become rigid. By this time the breathing has become more accelerated and a distinct snore is heard, the pupil is more dilated, the conjunctivæ are insensitive. There may be a slight twitching of the orbicularis at the outer canthi, and some patients will roll the eyeball from side to side or turn it up. When an operation which does not require absolute quiet is to be done, the intervention may take place, even while the patient is still rigid. It has repeatedly been found that analgesia precedes anæsthesia. The patient may feel that something is being done, but will not recognize it as a pain. When anæsthesia has been induced it can be continued for long operations, or the change can easily be made to some other anæsthetic.

Various methods and forms of inhalers are employed. Almost any apparatus can be adapted to the use of ethyl chloride if the air supply can be limited, and to and fro breathing maintained. Ware's (New York) mask is a plain face piece, into which a metal cylinder is fitted; a gauze diaphragm is held in place by the fitting of the cylinder into the face piece. Hewitt (London) introduced the ethyl chloride into his own apparatus by inserting a small bottle into the opening of the tube from the gas cylinder into the bag. Luke (Edinburgh) drops it into an opening in the elbow above the bag. Goldan (New York) places upon his face-piece a chamber containing gauze, whose air supply is controlled by valves. In the demonstrations this evening, your own Dr. Green's modification of the Ware inhaler exhibits several distinct advantages if one cares to work

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with a bag. Bennet's (New York) ether inhaler could very easily be modified to answer the same purpose by boring a hole in the elbow, as in Luke's apparatus, to allow the desired dose to be placed into the supplemental bag. For my own use I have but placed an expiratory valve into Ware's face-piece and am using an inspiratory valve in the place of the gauze diaphragm, for I still have a reluctance to adopt the bag feature. However, the bag can be placed in position very easily, and if the inspiratory valve is unscrewed and the expiratory valve closed all the advantages of an administration with a bag apparatus are obtained. There will be cases in which either method will be preferable.

It is to be regretted that manufacturers have affixed trade names to their products. Kelene, chloryl anæsthetic, antidolorin, anodynone, æther chloratus are but ethyl chloride. Narcotile in a bichloride of methylethylene (Lancet, April 18, 1903). I have found several writers using the name by mistake for ethyl chloride. Any guaranteed chemically pure article can be employed. When a closed mask is used, the cost will be very little, for a first-class product can be purchased at the rate of 1.7 cents per grain.

Ethyl chloride is worthy of your trial. You will like it for its convenience in administration, even if you do not find it to possess any other advantages; and though you should find that some patients suffer somewhat more from nausea and are a trifle more tardy in fully recovering there will be so many others for whom the available operative time has been so much extended and whose condition has been so tranquil and generally satisfactory, that it may be very likely you will agree with a host of us who are satisfied that ethyl chloride is a reasonably safe, decidedly pleasant and sufficiently efficacious general anæsthetic.

Pyorrhea Alveolaris.

By J. ERNEST REHNSTROM, D.D.S.; Chicago, Ill.

Read before the Scandinavian-American Dental Society.

It has been claimed that the treatment of pyorrhea alveolaris should be entrusted to specialists. That a great majority of the general practitioners have been woefully deficient in coping with this disease is an acknowledged fact. The great prevalence of incipient pyorrhea makes it imperative for the general practitioner to operate upon and treat this greatest disease of the mouth. There is a divergence of opinion as to the etiology of pyorrhea. I have no new theory to advance. My own opinion is that the disease is a local one and will respond readily to local treat-

ment. The success I have had during the past three years with exclusive local treatment satisfies me beyond the question of a doubt on this point. I realize that skepticism exists to a great extent in our profession as to the treatment and cure of this trouble. Dr. Riggs demonstrated the efficacy of removing all deposits from the necks of all teeth affected with what then became known as "Riggs disease." Later Dr. Wm. J. Younger, of San Francisco, gave to the profession the results of his years of exhaustive experiments, care and treatment of pyorrhea alveolaris. To him more than any other today are we indebted for the marvelous success in its treatment and permanent cure. The method employed by him, with some additions, is practically what I have adopted, and to those who so ruthlessly extract teeth thus affected I make a strong plea to give the method of treatment a careful trial. I am satisfied that the results will make them ardent supporters of the theory that pyorrhea alveolaris, either in its incipient or chronic stage, will respond to local treatment.

I do not wish to take up your time by recounting the many methods and theories that are advanced, but
Method of Treatment for Pyorrhea. will describe the method that I have adopted in the

hope of interesting you. I wish to say, however, that the method adopted by me is the one that has been the most effective. Of the many others that I have tried in my efforts to relieve patients I shall not dwell on those I have discarded, but will acquaint you with that one now employed by me with such splendid success. Thorough asepsis is absolutely necessary. The operation is purely surgical, and too great care cannot be observed in perfect sterilization of all the instruments employed. I use a glass dish about the size of a finger-bowl. This bowl I fill in the proportion of two-thirds of water, and into this water I pour three or four drops of Cabot's sulpho-naphthol. All instruments employed during the operation are constantly kept in this powerful germicide. Each instrument is returned to this receptacle when not in use. The mouth is then thoroughly rinsed with dioxygen for cleansing.

After making a careful examination of the teeth affected, I select one, two or three teeth as the present field of operation and inject a local anæsthetic into the pockets. I first remove the larger deposits from around the necks of the teeth, continuing this until I am satisfied that all the serumal calculi is removed from around the tooth from the gum line to the apex of the root. The operator must use especial care in removing this deposit, for the slightest particle allowed to remain will serve as a nucleus for the recurrence of the trouble. That delicacy of touch which will enable you to determine the presence of a slight deposit is only resultant from extended practice of this feature of the operation. In the removal of these deposits I use a varied assortment of scalers, etc., mostly of the

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Younger and Allport patterns. It is not necessary to lacerate the gum. Care should be taken to avoid this. If there is any excessive bleeding the application of hot water will arrest the hemorrhage. During the removal of the deposits, from time to time, I spray the mouth with a fragrant mouth wash, luke warm, and I use dioxygen frequently. After completing the operation of removing the deposits I thoroughly dry out the pockets, and then with a hypodermic syringe inject lactic acid, full strength. In the use of lactic acid care must be taken to keep the lactic acid from the gums, as it is slightly escharotic. This completes the treatment of the first sitting. It might be well to emphasize the importance of not using any wash or spray after using the lactic acid, because the lactic acid must not be washed out. The patient is dismissed, and at the next sitting three or four more teeth are similarly treated, and this follows until all the affected teeth have been thoroughly rid of the serumal calculus. Should any of the teeth be loose, silk ligatures or wire is employed, and these are allowed to remain in place until the teeth become firm. After the foregoing treatment I usually see my patient daily, each of these subsequent sittings being of short duration. At such times I cleanse the mouth, then inject lactic acid and dismiss the patient. In the course of two weeks or more you will find new and healthy tissue and a complete absence of pyorrhea. Should any of the teeth involved not yield promptly it is more than probable that the removal of the deposit at this point has not been thorough, and a renewal of the scaling process is advisable. When the patient is finally dismissed I advise a mouth wash and dentifrice and prophylactic tooth-brush.

The treatment as here described has been followed by me in a very large number of cases during the three years I have been making my observations, and I am satisfied by the results that it is the best that can be used and the only one that should be employed in relieving our patients afflicted with this very common trouble.

Electrolysis in the Mouth.

By C. P. DAVIS, D.D.S., Americus, Ga.

Read before the Georgia State Dental Society, Atlanta, May, 1905.

Last year I read a short paper before this Society, advancing the theory that one cause of discoloration of gold fillings in the mouth is an electrical action. The subject of discoloration of gold fillings is as old as dentistry, but the theory of electrical action being the cause, except where

gold and amalgam lay in close proximity, is, so far as I know, entirely new and original, and I was somewhat disappointed that no one seemed to be disposed to discuss my paper.

This subject is not of vital importance, but if we know the cause of anything then we may get rid of the effect by removing the cause.

Since last year's meeting I have given more thought to electrical action in the mouth, and now, more than ever, I believe that in our work we should as much as possible try to use materials that would overcome it.

Is it not probable that the reason so many of our amalgam fillings fail, and caries recurs, especially near the gum margin, may often be charged to electrolysis, rather than to improper manipulation of cavity margins or material? So often do we fill an approximal cavity with amalgam where we know our margins are sound and we believe the filling should last a lifetime, yet in a few months we find recurrent decay, and we ignorantly wonder why, and say "poor tooth structure," when really it might only be electrolysis or the electrical deposit of the silver from the amalgam filling upon a gold filling, crown or bridge in some other portion of the mouth. Naturally the greater part of the metal of the negative pole, or amalgam filling, would be removed from nearest the gum, which acts as our circuit connection, leaving our cavity margins microscopically exposed to micro-organism and rapid breaking down. Perhaps you can recall to mind a patient coming to you with one or two amalgam fillings only, in the mouth, black and bulging from the cavity, yet having done good service for years. You insert one or two other amalgams and some gold fillings, or a crown, and in a year or two your patient returns with your amalgam fillings "leaking"; you wonder what formula of amalgam that other fellow used fifteen years ago. We charge it up to "susceptibility to decay," and think we are wise; but are we? Had you put on a porcelain crown or used cement instead of gold fillings, your amalgam would have stood as well as the old ones, I believe.

Some one not having heard my paper last year might naturally ask: How do you get the electric current in the mouth to set up electrolytic action? I therefore repeat that when two metals of unequal oxidizing power are immersed in an acid solution and connected, we have an electric battery, the amount of the current depending upon strength of the acid solution, area of surface and difference of oxidizing quality of the metals. In the mouth your amalgam would be negative and the gold crown or fillings positive poles, nerves and gum tissue your connecting wires and saliva just the moment it becomes acid, completing your battery. Give this theory a thought.



The Situation in Wisconsin.

By HENRY L. BANZHAF, D.D.S.

Addressed to the Executive Committee of the National Association of Dental Faculties.

For your information I herewith submit this statement of facts with correspondence relating thereto. I have also made a separate report of educational conditions here in Wisconsin, as they affect our College, to the Committee on Law. Having only one copy I am obliged to omit in this report to you, the findings of fact and conclusions of law handed down by Judge Williams, a copy of which I am sending to the Chairman of the Committee on Law. We are not seeking assistance, but I feel that it is my duty to make this report, as a matter of general information, with permission to make such use of it as may appear wise and just.

On or about the 2d day of August, 1904, I wrote a letter to Dr. A. H. Peck, Chairman of the Ad Interim Committee of the N. A. D. F., asking for his opinion as Chairman, as to the status of some students in our College whom we had been instructed by the Faculties Association in session at Asheville to graduate after three years of additional attendance. In this letter I called the attention of Dr. Peck to the pages of the proceedings of the Asheville meeting on which the detail of this matter could be learned and the manner in which it was disposed of. The students had attended the second year at our school in accordance with the instructions we had received from our National body. In view of the action taken by the N. A. D. F. at St. Louis in 1904 and in view of the fact that these students presented evidence to me showing that they could graduate from other colleges by attending one more year, I wrote the letter to Dr. Peck, marked Exhibit "A," copy of which is hereto attached. Dr. Peck's reply is also hereto attached. Upon receiving this information from Chairman Peck the facts were communicated to these students by letter informing them that they would be admitted to our senior class, and would be graduated with the class of 1905, provided they passed our final examination. This is proved by Exhibit "C" hereto attached. The students entered in full expectation that we would carry out the terms of this contract. This we were preparing to do when, on the 6th day of February, 1905, I received an inquiry from the Wisconsin State Board of Dental Examiners respecting these men. This is proved by a copy of the letter received and marked Exhibit "D." I made no reply to this letter in writing, but a number of conferences were held between the Secretary and President of the Board and myself and counsel

for the college, all of which were without avail. This is proved by a letter received from Secretary Wright, a copy of which is hereto attached and marked Exhibit "E." Upon the receipt of this letter a meeting of our Board of Trustees was called, and this matter was carefully considered, and it was then decided that the College would observe the instructions of the Board and not graduate these men. Acting on the advice of counsel, because of the discontent which this information spread in the ranks of our student body, we allowed these students to take the final examinations, hoping against hope that the matter might still be amicably arranged. In the latter effort, however, the College failed. The students passed their examinations, but were not graduated. Commencement day was on May 15. A few days after that date Robert A. Burg, one of this number of students who had earned a second grade teacher's certificate during the fifth month of his first year's attendance at college, brought an action against our school. The College engaged one of the most competent attorneys in the city of Milwaukee, Mr. Henry J. Killilea, and instructed him to espouse the cause of the College to the best of his ability, the College rendering him every assistance as to statements of fact. Furthermore, the college tendered the defense of this action in whole or in part to the Wisconsin State Board, on the ground that this action was brought because we had strictly observed the orders of the Board. This is proved by copy of a letter addressed to the Board and marked Exhibit "F." The Board sent word through its attorneys that it, the Board, had no interest in the action. This was shortly before court was convened. Counsel for the College then requested that the court grant one week's time, on the ground that the College felt that possibly the State Board did not understand or realize its duty in this matter.

This request was granted by the court. Another effort was then made by the College to induce the Board to take up our defense, which, however, the Board declined to do. This is proved by a copy of a letter received from the Board and which is marked Exhibit "G." The College then proceeded to defend itself to the best of its ability, taking the Board's view of the situation as we understood it from the limited information which we had been able to obtain. The case was decided against the College. This is proved by copy of judgment and findings of fact and conclusions of law and order for peremptory writ of mandamus, which is hereto attached and marked Exhibit "H." The College thereupon succeeded in obtaining a stay of proceedings from the court of thirty days, within which an appeal to the Supreme Court might be taken. On June 26, 1905, three graduates of the class of 1905, among others, appeared before the Board for examination. These graduates had attended one year in some other college, for which reason they were

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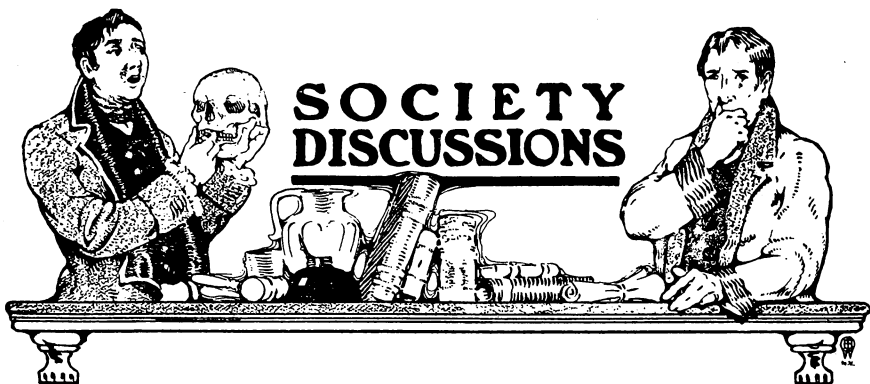
disqualified to receive licenses without examination. When the class was ready to be examined the Secretary of the Board called them aside and informed them that they were ineligible to examination because the Wisconsin State Board of Dental Examiners had that morning declared our school not reputable. This information was immediately conveyed to me by the graduates, whereupon I called up J. J. Wright, Secretary of the Board, on the telephone, stating what had been reported to me concerning the reputability of our school, and asked him for a confirmation or denial. He, Wright, informed me that the Board had taken action as told me by the graduates. He, however, declined absolutely to assign any reason for this action. A few hours later one of the graduates returned, and informed me that the Secretary had made the statement to him that the cause of the action was the reported graduation by the College of the six men in question.

When the Board was informed that the College had not granted such diplomas, and that not even Robert A. Burg had a diploma, pandemonium apparently reigned at a subsequent session of the Board. About that time, which was only a few hours after the passage of the resolution referred to, I called up the Secretary on the telephone for an explanation. He said he could make no statement whatever. The next day we learned that the first resolution had been rescinded. This is proved by a copy of the minutes of the proceedings of the Board on June 26, a copy of which is hereto attached and marked Exhibit "I." On that date a letter from the Secretary of the Board, addressed to me under date of June 27, was received, a copy of which, together with my reply, are hereto attached and marked Exhibit "J." On June 28 another letter was received from the Secretary of the Board, addressed to me, a copy of which, together with my reply, are also hereto attached, and marked Exhibit "K." On June 29 counsel for the College made a request for a conference, which is proved by a copy of a letter addressed by counsel for the College to the Secretary of the State Board, a copy of which is hereto attached and marked Exhibit "L." The request was granted, and the conference was held in the Hotel Pfister on the evening of that day. The College practically prostrated itself before the Board, and I made the statement that if the Board would help us we would appeal the Burg case to the Supreme Court. An informal statement made by the Secretary of the Board to counsel for the College, together with personal conclusions of our own, made it appear that if the College appealed the Burg case the State Board would feel satisfied and grant licenses to the other members of our graduating class. In this, however, we were misled, for in a letter received from the Secretary of the Board addressed to the College under date of July 1 the final action of the Board was made known

to us. A copy of this letter is hereto attached and marked Exhibit "M." Exhibit "N" is a copy of the letter addressed to one of our graduates by the Secretary of the Board practically imparting the same information. Exhibit "O" is a copy of a letter addressed to me from Dr. C. C. Chittenden as Chairman Committee on Colleges, N. A. D. E., under date of May 30, 1905, being *fifteen days after Commencement Day*. I respectfully call your attention to paragraph 4 of this letter, comment on which I feel is unnecessary. We are now engaged in litigation, which means not only the very life and existence of our School, but which also involves a fight for a great principle. In this we are confident of success, and pending this now only ask your moral support.

(The above was presented to both the National Association of Dental Examiners and the Faculties Association. The salient features of the situation are as follows: On May 15 the Milwaukee College held its commencement. On May 30 Dr. Chittenden, as Chairman of Committee on Colleges of N. A. D. E., wrote to Dr. Banzhaf that his school would be placed on the recommended list. On July 1 the Secretary of the Wisconsin Board notified the School that the Board declared it to be disreputable. On July 24 the School was reported favorably to the N. A. D. E., and on July 25 it was stricken from the list. The action of the N. A. D. E. and of the Wisconsin Board are certainly difficult to comprehend. The exhibits mentioned are copies of letters and papers confirming Dr. Banzhaf's statements.—EDITOR.)





Alumni Association of the New York College of Dentistry.

May Meeting.

Dr. Maurice Green demonstrated the use of ethyl chloride on two patients, and showed an inhaler which he finds very valuable in connection with its use.

Dr. Green. The advantages of this anæsthetic over gas and nitrous oxide you will see for yourself. It gives a much longer anæsthesia, without any of the complications that might occur with ether. This is an inhaler that has not been seen before, and I do not know what Dr. Erdmann will say about it. These tubes have heavy sprays, and we get a quicker anæsthesia in that way, I believe. (Dr. Green administered the anæsthetic to the patients.)

You have seen only two cases, but you can see it is a general anæsthetic. I have given it about two hundred and fifty times, possibly more. Nitrous oxide I have given one thousand times, or more, so I can compare those statistics. The smallest size inhaler is a carrying case, which is quite heavy, and the cylinder is heavy. It has the advantage over nitrous oxide that you can get an entire anæsthesia with the same safety. You get no cyanosis, as you see. From the literature I have on the subject there are no contraindications. Of course, you cannot give it to everybody; alcoholics take it badly, but they will take it if you sit on them until they are quiet.

The apparatus costs about one-tenth of what a nitrous oxide apparatus costs. The expense of anæsthesia is about eight cents. If you buy the one I buy from the Franco-American company, it is much cheaper, and has been very satisfactory to me. You get no noise as you do when the gas escapes from the cylinder; a nervous patient does not like that noise. You get only normal hemorrhage; with nitrous oxide it is said you do get a hemorrhage. I have not found any excessive hemor-

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rhage. Of course, I have had a couple that were excessive, but you get them in any practice where you do a great deal of that work. With nitrous oxide work you often hear patients say: "I saw everything and felt it, but could not move." With ethyl chloridē you do not have anything of the kind; the anæsthesia is perfect, if you wait long enough. The statistics I looked up were about thirty thousand, and although there were two or three deaths they were not bona fide deaths from the anæsthetic. They might have been fourteen hours afterward, as a case in England, or one hour, or twenty minutes after; but at the post-mortem it was found always that there were heart or kidney lesions.

You can give it to infants, middle-aged people or old patients. The man I gave it to tonight is fifty-eight years old. You seldom use more than five drachms in the manner I have given it, and 50 per cent. of the cases only take three. Dr. Erdmann knows much more about the subject, and will probably tell you all about it.

Dr. A. F. Erdmann then read a paper entitled "How Systemic Anæsthetics Act—Especially Ethyl Chloride."

I count myself fortunate in being able to succeed Dr. Green, particularly as it will allow me to abridge my paper somewhat, because it would be repeating some of the things he has said. My paper will deal more with anæsthesia in general.

I might say that my experience with ethyl chloride has been more in the realm of general surgery than in that of dentistry. It was my privilege, however, to give the gas for one dentist, and a private patient of mine, with whom it succeeded quite as well as the case this evening, although I did not use the apparatus shown tonight.

We have been using it for eye cases, lasting over ten minutes, and in each case the patient recovered quite as well, although not quite as rapidly as the patients this evening.

I have used it in other prolonged and severe operations for removing pus in cavities in empyemia once in the case of a boy who was very much run down and emaciated. In another case for the removal of a kidney; the operator was decidedly fearful lest anything happen to his patient, and had me called in to give ethyl chloride.

Any one who thinks he could use any kind of ethyl chloride for any length of time and not get any bad results would be mistaken, although nothing might happen.

I recall one case of having opened an abscess for a very poor patient. There was no money in it for any one—in fact, there was no money in the house. The man struggled very hard, and when we asked him afterward

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what was the matter, he said: "Why, I thought some one was coming in to rob me."

I am sure I have seen some literature where ethyl chloride was responsible for the death. They were bad cases, of course, and probably would have died under any anæsthetic; but the surgeon must be on his guard for those cases. Many cases are precluded from general anæsthesia, anyhow, and the operator should use local anæsthesia. In such cases, where the patient dies, I think the operator is largely to blame for having given a general anæsthetic; he should therefore be always on his guard.

Discussion of Dr. Erdmann's Paper.

I am at a disadvantage in not having heard the essay, but I feel myself so thoroughly conversant with the subject of the administration of ethyl chloride as a general anæsthetic that I want to make just a few remarks in extemporaneous fashion, bearing upon the giving of the anæsthetic in the manner which would serve best perhaps in dentistry.

Within the past five years this anæsthetic has been used by myself and assistants about thirty-five hundred to four thousand times. There have been in my own personal experience absolutely no deaths to record. Of course, that is too small a number to authorize your approval of this anæsthetic for all conditions. The anæsthetic, as far as the statistics I have been able to collect show, has been used in the hands of surgeons and dentists about two hundred thousand times. These statistics are collected from all over the world. There are on record two deaths, but both of them are absolutely not to be placed against ethyl chloride.

Deaths after Ethyl Chloride.

Both deaths occurred in the hands of dentists. They reported these cases as coming from ethyl chloride anæsthesia. The first death was reported from abroad, and was heralded very widely, and great capital made out of it as damaging to ethyl chloride. It may be known to you that the giving of ethyl chloride as a general anæsthetic we owe to the dentist particularly, who sprayed it into the mouth on to the gum and found that the vapor of the ethyl chloride vaporized by the heat of the body and inhaled, anæsthetized the patient. This first case reported from Zurich was a patient who had been anæsthetized before. She had the anæsthetic sprayed on her gum, 10 c. c. of ethyl chloride, became benumbed and stupefied sufficient to allow him to extract the tooth. She had general anæsthesia instead of the local anæsthesia which he aimed at. She went home and in two hours died. The post-mortem

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showed that there was another hemoplagic attack. Why he should represent that as a death from ethyl chloride anæsthesia I cannot understand.

The second death occurred in this country—in Philadelphia—a year ago, and was reported in the *American Journal of Medical Science*. The circumstances were very similar. It was not given in the manner in which we give it at the present day. The ethyl chloride was sprayed into the mouth, the patient left the physician's office, and died soon after. If in the course of time it is found that such occurrences happen often, it will require investigation to see what causes death so late in the day. This case was also found to be hemoplagic. Of course, we can hardly concede that an anæsthetic so volatile as ethyl chloride, of so damaging a nature, should make itself felt two hours after. These two cases are the only deaths on record, and they were treated in a way which we do not use at present.

Safety.

In regard to nitrous oxide, that we can give it to all patients of all conditions, regardless of examining the heart or kidneys, or any physical condition, I will say that the same obtains for ethyl chloride, and I can say that very conscientiously for the following reason: That these thirty-five hundred or four thousand cases, in which I have used ethyl chloride within the last five years, were given to patients, regardless of any condition whatever. They came to us in the dispensary. We sometimes have one hundred and fifty-two hundred patients, sometimes ten to fifteen anæsthesias to give, if we choose to do so, for minor surgery—for opening abscesses, setting locations, reducing fractures, etc. We have taken old and young, regardless of whether they have eaten a meal before, or not, which in itself is rather a risky thing. We have had a very large percentage of success, notwithstanding that we applied it in this very lax fashion. This ought to be encouraging to you to use it in your dental practice.

I took up ethyl chloride anæsthesia at a time when I myself had already given four thousand nitrous oxide anæsthesias for minor surgery. I came to be interested in ethyl chloride, for the reason that notwithstanding the fact that it had such a widespread use in dentistry, the surgeons had only used it as a preliminary to a general anæsthetic, and except in hospital practice, we never applied it as extensively as dentists in their private practice. When I found that ethyl chloride answered all the purposes of nitrous oxide, I felt free to use it, and have used it since, both as a primary anæsthetic and a preliminary to giving chloroform.

I have given it in the fashion in which you would be called upon to give it in dental practice. The method of the giving of the anæsthetic has, of course, undergone a great revolution. The number of methods is simply legion, and they have all worked toward the idea of minimizing the

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ethyl chloride. That has been the great drawback, and the question has been properly raised, from the economical standpoint, as to whether it is more saving to give an ethyl chloride anæsthesia, than a nitrous oxide anæsthesia, and until the present hour we were not in a position to state that without controversy; but now I think it is absolutely so. There is no doubt you can anæsthetize these patients in a host of ways. I have succeeded in anæsthetizing by simply dropping it on a towel. You can anæsthetize the patient to the full extent, the same as with nitrous oxide or chloroform.

Dr. Hewitt's Method.

The great gain that has come for the ethyl chloride anæsthesia is the impetus it has received from other sources, particularly that of Dr. Hewitt, of London, who is known to you as the great authority on nitrous oxide. He had recently taken up ethyl chloride as a competitor of nitrous oxide, and it was his experiment that led up to this feature in the giving of ethyl chloride—that we should not give it pure, but should give it mixed with carbon dioxide. As shown you tonight, the patient breathes in and out, his own breath, together with the ethyl chloride. It is a mixed anæsthesia in reality, of carbon dioxide and ethyl chloride, and it is this which has reduced it to a minimum.

The method which Hewitt devised has been placed at the disposal of dentists and physicians alike in this city. It is very useful, but has some drawbacks; if the patient is in any other than a perfectly upright position, the ethyl chloride as it is furnished in this mask is apt in the breaking of the vial to spray in the patient's face, and this is a disagreeable feature. To overcome that, Dr. Green, who had come to know of some of the uses to which I put ethyl chloride, was encouraged sufficiently to undertake a modification of that mask. I have tried his mask in a number of instances, perhaps fifteen or twenty, and I find it comes up to all expectations, as was demonstrated to you this evening.

Preparation of Ethyl Chloride.

The ethyl chloride itself is the final subject which I wish to consider. That is something that I dare say each one will have to solve for himself, very much as we find ourselves in the position of using various preparations of chloroform or ether. I have tried all of the preparations. Some of them certainly do work better than others. There are two preparations which I have used more than any other; one of them is that which Dr. Green has shown you this evening, and the other is the one known as kelling, which I have perhaps used more. One preparation is put up by Leaming, of this city, and either Lehn & Fink, or Schiefflin, put up a preparation known as Henning's. Very recently Squibb, whose name is identified with all excellent chemical preparations, has entered the

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field and given us a very excellent one; so we can use the one that will suit us best.

There is also a preparation made out in Chicago, which has a very queer device for releasing it. I do not think it is a very pure one either, judging from the odor. The device in which the ethyl chloride is put up may also be mentioned. I prefer those that have the automatic release. The experience I have gained is such that I wish to corroborate and substantiate the remarks made by the previous speakers. You can rest assured that in this agent you have an exceedingly safe anæsthetic, as I speak from my own experience and from what I have collected from the experience of others throughout the world.

As Dr. Ward mentioned the inhaler of Dr. Hewitt, I will show you wherein are the disadvantages of Dr. Hewitt's mask, because of which I failed in a number of instances, in the beginning. The economy with ethyl chloride is twofold: First, the less you give the patient the safer it is, which you do only with an inhaler of this kind, where the patient gets absolutely all that is put into the bag. With this inhaler, if you think the patient is getting too much carbon dioxide gas, you can regulate it by taking off your thumb from the tube. If you do not like the appearance of the patient's face, take off your thumb. I prefer to give as little as possible; it makes it all the safer. If you can economize on the price, I do not see why you should not. A patient will usually complain if you charge him more than \$5.

I will show you Dr. Hewitt's method. (Illustrating.) There was no inner tube; there was a sort of catch in which one of these was put, in this manner. There was a lever outside which cut the bottom of the tube, and the entire ethyl chloride fell on the cotton. It expands so rapidly that all could not get down on the cotton, and a great deal got on the patient's face, and it gave the patient too much of a shock. My first few patients jumped out of the chair, and I became disgusted. It was merely shock; they received the entire volume at once. By merely spraying a little in the first instance, you get the patient used to the odor, and he gradually becomes anæsthetized, and in that way receives no shock whatever.

As to the duration, the shortest period of giving the ethyl chloride—Dr. Erdmann had cases of twenty seconds. Dr. Birkhahn will bear me out in saying we gave a patient at the New York College of Dentistry clinic—a child about five years old—about four inhalations, and were able to remove two pieces of necrosed bone, and they were firm, too. I do not think it took more than ten seconds. I never have had to give it more than a minute.

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This is the Henning preparation. It comes in
Dr. Erdmann. this kind of a tube, and is released from a little cap like this (illustrating). It is a good deal cheaper than the other. Fifty grammes costs 85 cents. Besides that I thought possibly the gentlemen might be interested in this tube of Henning's, which is like the tube the Doctor showed from Dr. Hewitt. They are quite expensive, however. They contain too much for an ordinary operation and are really a waste.

I wish Dr. Ware were still in the room, because I must say I have records of more cases of danger than he has mentioned. In looking up the matter of ethyl chloride last year when reading a paper, I came across several cases of deaths reported and instances of trouble. Some of them were really due to ethyl chloride, as I said in my paper—cases where ethyl chloride should not have been used. I agree that it certainly is a very safe anæsthetic.

Second District Dental Society.

March Meeting.

A regular meeting of the Second District Dental Society of the State of New York, was held on Monday evening, March 13, 1905, at the Kings County Medical Association Library Building, No. 1313 Bedford Avenue, Brooklyn, N. Y.

The President, Dr. Gould, occupied the chair, and called the meeting to order.

The Secretary read the minutes of the January meeting, which were approved; also the minutes of the February meeting, which were likewise approved.

There have been a number of advertisements in magazines recently of an article called "Dencement." Being curious to find out what it was, I wrote to the parties for some of it. The whole thing is nothing more than a big "fake." They say they will sell for \$1 enough cement so every one can be his own dentist. The advertisement reads: "Dentists in large cities charge \$5 for a filling; this is enough for twelve fillings, so that you save over \$50." It further says the United States Government, by allowing the famous "Dencement" and all its correspondence to pass through the United States mails during the past three years, virtually approves of it. I wrote to the Post Office Department about it. We should do every-

SOCIETY DISCUSSIONS

thing in our power to stop such fraudulent actions as this. I would suggest that it be referred to the proper committee.

On motion, the matter was referred to the Law Committee.

Under "Incidents of Office Practise," Dr. J. P. Ruyl showed a patient on whom he had operated for necrosis. Dr. Ruyl read a paper on the subject.

Discussion.

Dr. Babcock.

What anæsthetic was used?

Dr. Ruyl.

He was under ether. The occlusion of the plate was only on the two back teeth. The articulation was made on the temporary teeth, and since then the boy has lost some of those teeth.

Dr. Van Woert.

I do not think there is room for any discussion on the paper of Dr. Ruyl; but I want to rise and compliment him. The work is certainly very clever, and he deserves a great deal of credit for restoring a child of that age as well as he has done. It is one of the cases that would not have been successful unless carefully and properly handled, and we are indebted to Dr. Ruyl for bringing the patient here and showing us what he has done and can do.

Dr. Hanning.

I think that case shows the advantage of having a dentist in consultation. About six years ago I read a little sketch of some work I had done for a patient for necrosis. That patient was operated on at the age of three, by a very prominent surgeon. I saw her when she was about fourteen. The chin was allowed to fall back and collapse as far as the tongue would permit it. The young woman was simply a monstrosity. She was unable to close her lips. There is a model of it in the Odontological Museum, and it was described in *ITEMS OF INTEREST*.

Dr. Dawbarn operated on the case with good result. I inserted an apparatus to jump the bite, and it was really a case of jump. The effect now is pretty good, but there is still the appearance of a decided receding chin, and I have always felt that if a dentist had been consulted, it might have been otherwise, because there was a secondary deposit of bone. Dr. Ruyl deserves a great deal of credit, and I think the physician who called him also deserves credit, for it is not often done.

Dr. W. H. Bentley, Jr., of New Jersey, showed a patient who had a fracture of the jaw between the lower canine and first bicuspid. Dr. Bentley showed the splint he had used, and read a paper relating to the subject. The audience examined the patient and the appliance used.

Dr. C. J. Mapp then read a paper entitled "The Administration of Nitrous Oxide Gas in Dental and General Surgery."

ITEMS OF INTEREST

Dr. Mapp. We have some interesting, as well as amusing, things happen in the office.

There is a lady in this city who feeds through a tube which enters her stomach; she took gas satisfactory.

I gave gas to a man who woke up and asked me to give him his ring, which he claimed had fallen to the floor. My assistant and I knew no ring had fallen, and it was rather embarrassing.

One woman came in and asked me to give her gas for gastritis.

Another woman came in and said: "You must have given me an awful dose of gas last week." I said: "Why?" She answered: "It has been coming off my stomach ever since."

A man came into the room with his wife's tooth in his hand and said: "I'm awfully glad that tooth is out." I said: "I should think you would be; she must have suffered." He said: "Oh, not for that reason, but she kept me awake nights!"

In my new operating room I commenced the practice of not using any water after the extraction at all. I wash the mouth out with glyco-thymoline; then they do not sit there an hour and spit and spit. (Laughter.)

Another good thing is to take all the mirrors out of the operating room. Some women will stay fifteen minutes putting their hats on.

Dr. Hasbrouck was slightly deaf. A patient came in and he extracted her teeth for her. She said: "How long will it be before I can eat something?" "Oh," he said, "in from three to six weeks." He thought she had asked when she would get her new teeth.

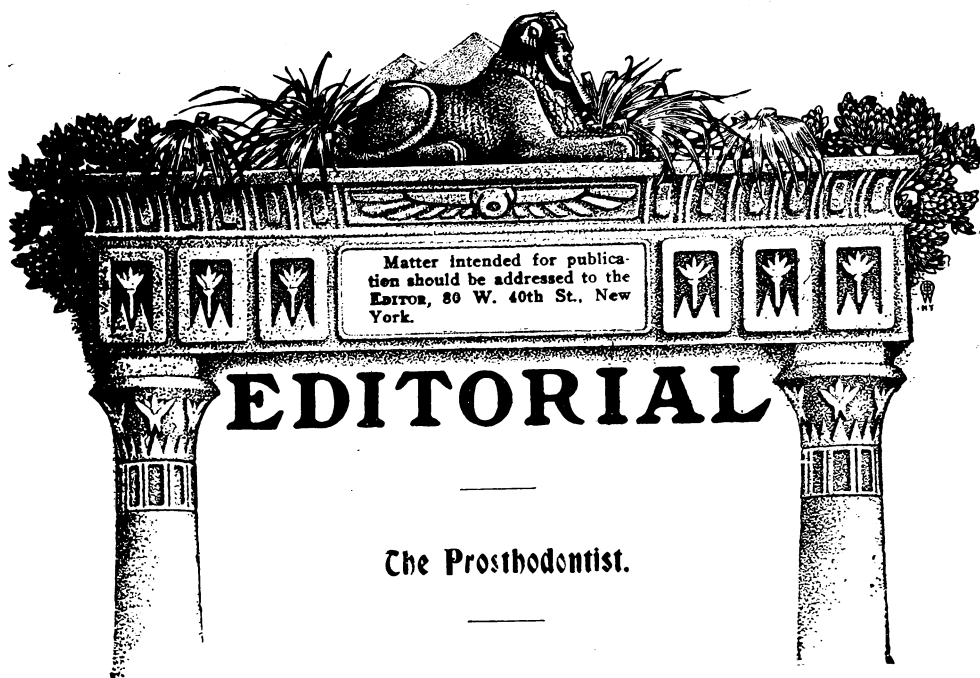
Dr. Babcock. Has Dr. Mapp ever tried filling up his own mouth with 50 per cent hydrogen without using water afterward? I think he will find it is pretty brassy.

Dr. Mapp. I have used glyco-thymoline afterward.

Dr. Babcock. How much?

Dr. Mapp. We use it pretty liberally—about 50 per cent. It doesn't cost anything! (Laughter.)





Some years ago we gave to the profession the word "prosthodontia" and we have had a department devoted to that subject almost continually in our pages. Many years prior to that the word "orthodontia" was coined. At the present time we have an increasing number of men who devote themselves solely to the practice of orthodontia, and these call themselves orthodontists. Shall we likewise have prosthodontists? Orthodontia, orthodontist; prosthodontia, prosthodontist! Why not? Before the arrival of the orthodontist men "regulated" teeth. Sometimes they only claimed to "straighten" them. Analogously we have "mechanical dentists"; men, many of whom merely make "false" teeth. Usually their work establishes their claim.

The Sphere of the Specialist.

The specialist, in orthodontia, has made a special study of his art, and his aim is to so rearrange the natural dental organs as to establish occlusion, a pleasing alignment, and, as nearly as possible, harmony of the features. The prosthodontist will be a man proud of his calling, and he will do all that the orthodontist does, except that his restorations must be with the aid of artificial substitutes. He will establish occlusion, a pleasing alignment, and a matching of the artificial with the natural, and,

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withal, he will have the artistic temperament which will demand that his work shall restore harmony of the features.

Let us ask the question, "What is the desire of the patient who applies for artificial teeth?" Primarily, he wishes teeth. Let that be borne in mind. Too many men—men of skill and ability—forget this. In solving the problem presented, too often the mechanical genius devotes all his energies to the structure which is to carry the teeth. Shall it be plate or bridge? If the latter, shall it be fixed or removable. If removable, of what nature shall the clasps be? These queries decided he goes to work, and perhaps he produces a fixture which is the acme of his art—of the mechanical art of dentistry. The final step, the choice and assembly of the teeth, he treats as a simple proposition. There is an attempt at matching color, but a shade one way or the other matters little. The length and width of each tooth receives some thought; the form of it, little, if any. The occlusion is all too often a useless antagonism, all morsal surfaces being ground to shapeless smoothness. The result may be a wonderfully adapted mechanical substitute for the lost organs; one that fits, and is firmly attached; perhaps even of some use in mastication. But, oh! how often after all is it the product of the mechanical dentist, and not of the prosthodontist? How readily the friends of the patient detect the falsity of this appliance, of which no doubt the dentist was so proud!

Two occurrences recently, coming close together, have suggested the theme of this editorial. First, a visit from the patient of another dentist. A gentleman highly esteemed, and a man of great ability. The case at the outset must have been most difficult; special porcelain crowns had been made, so shaped as to form most ingenious abutments, about which a removable fixture was adapted. All was accurately and beautifully achieved. But the teeth? The baby grandchildren will know them to be false. Wrong in size, wrong in shape, wrong in color, the dentist yet further decorated them with little simulations of tobacco stains. Oh, the poverty of such art, and the uselessness of it! Think a moment; why should an almost complete set of teeth be stained with tobacco? To advertise the fact that the man has had this unclean habit?

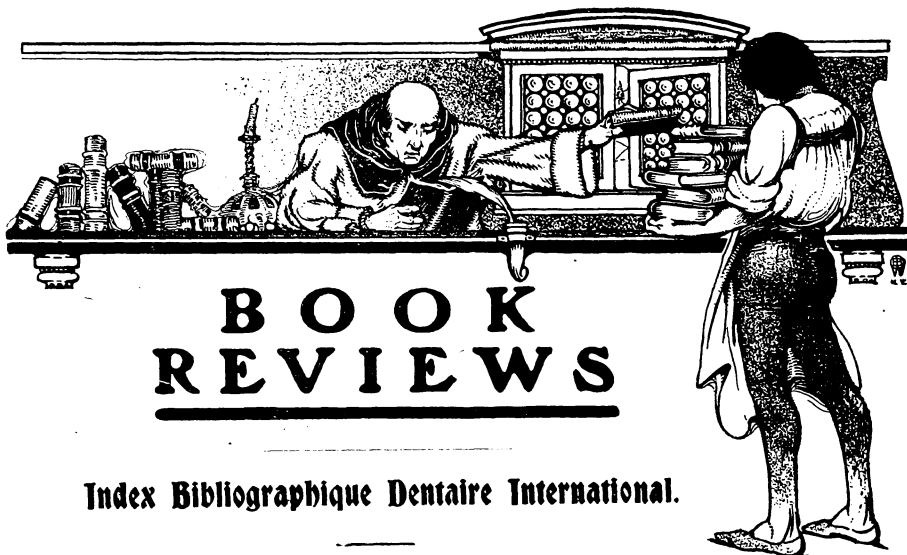
The other visit was from the agent of a mechanical laboratory, who presented specimens of his work. He little appreciated that these specimens would prevent any dentist of artistic temperament from sending work



to such an establishment. Nice straight teeth, in nice straight rows. Full sets articulated so as to compel an up and down movement in mastication. But the finish, ah! the finish! All gold surfaces shone like mirrors. All rubber attachments polished to the most inaccessible corners. A factory product, but then what is a mechanical laboratory but a factory? A factory for false teeth, forsooth!

Kind genius of dentistry hasten the day of departure of the mechanical dentist, and the man ashamed of making false teeth; so ashamed that he must have the major part of the work, for which he takes a fee, done in a factory. Hasten the coming of the prosthodontist, the artist in the production of artificial teeth, proud of his calling, and earning with his own hand and brain the money of his clients.





Compiled under the direction of E. Friteau, Librarian and Recorder
l'Ecole Dentaire de Paris, by H. Ch. Fournier, Preparateur du Cours
de Pathologie externe. Vol. I, year 1903. Paris, 1904.

This Index of International Dental Bibliography is a little *brochure* of 76 closely printed octavo pages, and is a commendable effort to make current dental literature better known and more accessible.

We are informed in the introductory, that this bibliographical index is the first of a series to be annually published, noting the various dental publications, and the more important papers and articles of dental interest appearing in dental and medical journals throughout the world.

These are arranged according to authors, alphabetically, under eight general headings with numerous subdivisions, well designed to facilitate ready reference.

Several dental journals have previously attempted this, giving a list of such publications with each issue. While this has been helpful, the notes have been necessarily brief, and the lists so scattered that their usefulness has been limited. The work under review is a decided step in advance. The notes, while concise, are sufficiently explicit, and are accompanied by the name of author, the date and publisher, or the title of journal with volume and page given in full.



None but those well conversant with the volume of dental literature can appreciate the great labor of compiling a work like this; or its value to a student in showing what has been done or where needed information may be found. It reveals to all, however, the untiring industry of dental investigators and dental writers. The work well merits the profession's approval and encouragement.

W. H. T.

Précis de Radiographie Dentaire suivi de Notes sur l'Endodiascopie

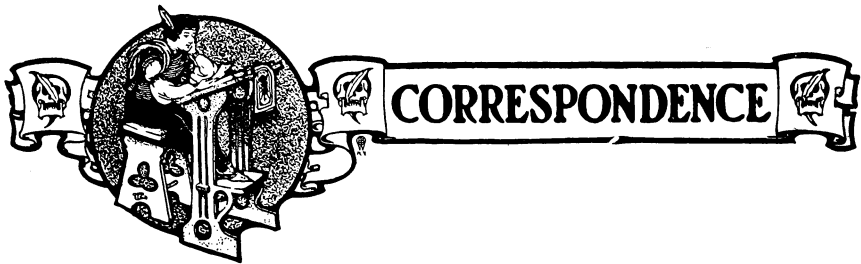
A l'usage des Chirurgiens-Dentistes et des Etudiants en Chirurgie Dentaire, avec 21 figures intercalées dans le texte.

Par René Darmezin. Vigot Frère, Editeurs, Paris 1905.

This little manual on Radiography applied to dentistry, for the use of dental surgeons and dental students, gives a general elementary description of the means and methods by which the wonderful X rays are utilized in dental diagnosis. It is interestingly written, and will be appreciated by those seeking general information on this subject who are not versed in electrical science. To these, its 95 large octavo pages and its well selected illustrations will be full of interest and far more instructive than would be a more pretentious and more technical work.

W. T. T.





Objectionable College Advertising.

Editor ITEMS OF INTEREST:

I have been attracted by the numerous papers and editorials of the past few months on the general subject of "*Ethics*." The discussion on need of a code has almost been humorous, when we take into account the apparent earnestness of the writers. The men who would control the future of the dental profession are very much divided about some of the things prohibited by the code. Some think the code a back number, others that those who thus think, have never read the code, and therefore, have no right to find fault. But for this we care nothing. Let us stop that part of the discussion where it is and look about us and see where the real trouble lies. What is the matter? Who is to blame? Who are the agitators? Who are the offenders? What is the cause? What is the remedy?

We notice that the one great fault, as seen by most of our brothers, is that the young men *advertise, advertise, yes advertise*, by hand-bill, by poster, in the newspapers—in fact, almost any way to attract people. This is the great cause of all the fuss. *And who is to blame?* The answer is easy—the colleges of the country—the *dental colleges*. *Why?* Because in these very institutions almost daily some of the professors make it their business to say: "It is quackery to advertise," "it is unprofessional to advertise," "it is degrading to advertise," and, in short, "a dentist who will advertise is everything that is bad; he has no respect for his profession, and the social ban should be placed upon him." *But what do these students see all about them?* They pick up a morning paper and the first thing their eyes behold is something like this:

Blank Dental College!

Open to receive patients from 9 to 5 o'clock daily. No charges except to cover cost of material. Experienced demonstrators always in charge.



In the evening they got another paper and again they see the same advertisement, and in some cases a half-dozen places in the same issue. *Who is responsible for this?* Surely not the same brothers who are daily saying so many harsh things about the advertiser. Surely they would not call themselves "quacks"; surely they would not say they should be *banished from good society*; surely they would not say they were a *disgrace* to the dental profession. But are they not guilty of doing the very thing they condemn every day, and are they not teaching the student to advertise?

Some time ago I was very much surprised to see in an opera house program the following advertisement:

NOTICE

**On Next Friday Afternoon all FREE
Filling will be inserted**

Other days the work is done at cost of material. Experienced demonstrators always in charge.

THE CENTRAL COLLEGE OF DENTISTRY*

Corner Ohio and Illinois Streets

BRING THIS ADD WITH YOU

And yet the young men are condemned for advertising. The colleges are their competitors for business. The college is simply a big dental office, so far as the public is concerned; but it is all right for it to go to the public in every way possible, and it is all right for it to do cheap work, and it is all right for it to cripple the dental practice in the city where it is located, but it is all wrong for one of her graduates who is trying to do something for himself—it is all wrong for him to advertise in the same way as his teacher—the college. And then again, the men who are making the most noise about this particular violation of the code are the men who are themselves responsible for the doings of the colleges, and it is certainly very bad taste for men, themselves violators, to criticise others.

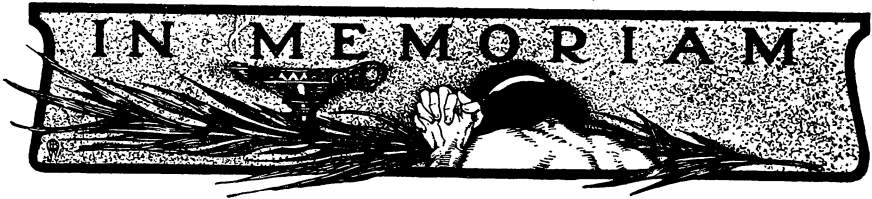
The remedy is with themselves. Let the college stop the advertisement and limit her clinic to the people not able to pay the fee of a regular dentist and a very large per cent of the objectionable advertising will disappear, not only from the city, but from the country as well. Again, I

*Said to be a member of the Faculties Association.

ITEMS OF INTEREST

say the colleges and their bold advertisements are the cause of at least 90 per cent of the advertising done by the local dentist of today. I hope this agitation may continue until the colleges of the United States will become ethical and the rest will surely follow.

H. C. GOODRICH, D.D.S., Shelbyville, Ind.



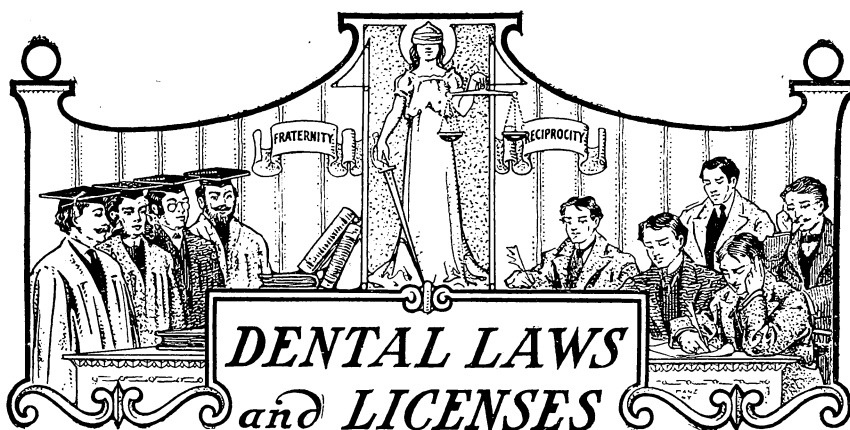
Ellery C. Young.

Whereas, It has pleased Almighty God to remove from our midst on December 6, 1904, at the age of sixty-one, Ellery C. Young, of Leipzig, Court Dentist to the Grand Duke of Anhalt, be it

Resolved, That the American Dental Society of Europe has sustained a serious loss in this, the death of one of its oldest members, who was respected in his community for his uprightness and sterling worth and who was recognized by all as a superior dentist and a worthy colleague.

Resolved, That this resolution be published in the leading dental journals of the United States and a copy be forwarded to the bereaved wife of our friend and colleague and that this resolution be placed upon record as part of the proceedings of the society.

WILLIAM A. SPRING,
G. H. WATSON,
W. MITCHELL,
Committee.



States That Interchange.

Arkansas reports no interchange as yet, but Oklahoma reports interchange with Arkansas.

District of Columbia interchanges with New Jersey.

Florida interchanges with States whose laws are equal to Florida's.

Indiana interchanges with New Jersey.

Michigan interchanges with New Jersey.

New Jersey interchanges with Indiana, Michigan, North Carolina, Tennessee, Utah and Vermont, and by special agreement with New York.

New York interchanges with New Jersey and Pennsylvania.

North Carolina interchanges with New Jersey.

Oklahoma reports interchange with Arkansas.

Pennsylvania interchanges with New York.

Tennessee interchanges with New Jersey.

Utah interchanges with New Jersey.

Vermont interchanges with New Jersey.

Requirements for Licenses and Dates of Examinations.

Secretaries of State Boards are requested to keep us constantly posted in regard to dates and places of examinations or changes in their laws that this department may be kept up to date.

Examination required, with or without diploma.

Alabama. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations annually on the first

ITEMS OF INTEREST

Monday before the second Tuesday of each year. Secretary, Dr. Thomas P. Whitby, Selma, Ala.

Arizona. Examination fee \$25. Secretary, Dr. Wm. G. Lentz, Fleming Rock, Phoenix, Ariz.

Arkansas. Examination with or without diploma; applicants must attain an average of 75 per cent to pass. Examination fee \$5. No special examination granted to practitioners already in practice; no temporary licenses. Oklahoma reports interchange with Arkansas, but the secretary of Arkansas reports no interchange as yet. Secretary, A. T. McMillin, 5th and Main streets, Little Rock, Ark.

California. Examination required with or without diploma. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, C. A. Herrick, Jackson, Amador Co., Cal.

Colorado. Examination granted to holders of diploma only. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations first Tuesdays of June and December, at Denver. Secretary, Dr. M. S. Fraser, 407 Mack Building, Denver, Colo.

Connecticut. Applicant for examination must have diploma, or must have had five years' instruction from a licensed dentist, or three years' practice as a legally qualified dentist. Examination fee, \$25. A special clause permits reciprocal interchange of licenses in accordance with the Asheville resolution.

Delaware. Examination and diploma required in all cases. Examination fee \$10; \$1 for a certificate. All applicants for certificates come under the same conditions. No interchange of license with any other States. Examinations first Wednesdays in January, April, July and October. Place of meeting given when applicant writes for the information. Secretary, C. R. Jefferis, New Century Bldg., Wilmington, Del.

District of Columbia. Examination with or without diploma. Examination fee \$10. Reciprocal interchange of license with the State of New Jersey in accordance with the provisions of the Asheville resolution. Examinations semi-annually. Secretary, Dr. S. G. Davis, 607 13th street, Washington, D. C.

ITEMS OF INTEREST

Florida. Examination required with diploma. Examination fee \$10. No special examination for practitioners already in practice. Interchange of license with States whose laws are equal to Florida. Secretary, W. G. Mason, Tampa, Fla.

Idaho. Examination required with or without diploma. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any State. Examination, Nov. 27-29. Secretary, C. E. M. Loux, Pocatello, Idaho.

Illinois. Examination required without a diploma. Diploma required but no examination. Examination fee \$10. No special examination required for practitioners already in practice. No interchange of license with any other State. Examinations twice each year, usually in May and October. Exact date not yet known for 1905. Secretary, Dr. J. G. Reid, 67 Wabash Avenue, Chicago, Ill.

Indiana. Applicants for examination must possess diploma from recognized college or must have had five years' dental practice under a reputable practitioner of this State. Examination fee \$20. No special examination granted to practitioners already in practice. Reciprocal interchange of license with the State of New Jersey in accordance with the provisions of the Asheville resolution. Secretary, Dr. F. R. Henshaw, Middletown, Ind.

Iowa. Examination required with diploma. Examination fee \$20. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, Dr. E. D. Brower, Le Mars, Ia.

Kansas. No examination required if applicant has a diploma from a reputable college; otherwise examination required. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, Dr. M. I. Hulst, Hutchinson, Kan.

Kentucky. Examination required with diploma. Examination fee \$20. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations first Tuesday in June and December in Louisville. Secretary, Dr. C. R. Shacklette, 628 Fourth Avenue, Louisville Ky.

Louisiana. Examination required with diploma. Examination fee \$25, payable in advance. No special examination granted to practitioners already in

ITEMS OF INTEREST

practice. No interchange of license with any States—Board has the matter under consideration. Examinations twice annually in New Orleans, first examination on the day following the commencement exercises of the New Orleans College of Dentistry. Second examination occurs on the first Tuesday after the third Monday in October, this year, Oct. 17th. Secretary, treasurer and attorney, L. A. Hubert, 137 Carondelet street, New Orleans, La.

Maine. Examination required with or without diploma. Examination fee \$20. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, Dr. Dana W. Fellows, Portland, Me.

Maryland. Examination required with diploma. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any State. Examinations occur twice annually in Baltimore. In 1905 Nov. 6, 7. Secretary, F. F. Drew, 701 N. Howard street, Baltimore, Md.

Massachusetts. Examination required with or without diploma. Examination fee \$20 for first examination, subsequent examinations \$5. No special examination granted to practitioners already in practice. No interchange of license with any States. Examination October 25, 26, 27. Secretary, Dr. G. E. Mitchell, Haverhill, Mass.

Michigan. Examination required with or without diploma. Examination fee \$10. Practitioners already in practice may have a special examination before any member of the Board which will enable him to practice until the next regular meeting of the Board, when a regular examination must be taken. Reciprocal interchange of license with New Jersey in accordance with the provisions of the Asheville resolution. Secretary, Dr. C. H. Oakman, 29 State street, Detroit, Mich.

Minnesota. Diploma must be presented from a dental college in good standing or satisfactory evidence must be given of having been engaged in the practice of dentistry as early as April, 1879. Examination fee \$10. No special examination granted to practitioners already in practice, and the Board has no power to grant temporary license of any kind. No interchange of license with any States. Examinations first Tuesday in April and October. Held at Dental Department of the State University at Minneapolis. Secretary, C. H. Robinson, Wabash, Minn.

ITEMS OF INTEREST

Mississippi. Examination required with or without diploma. Examination fee \$10. Practitioners already in practice will be granted an examination by any member of the Board, who is authorized to issue a temporary license which will be valid until the next succeeding meeting of the Board. Only one temporary license shall ever be issued to the same applicant. Secretary, Dr. P. P. Walker, Brandon, Miss.

Missouri. Examination with or without diploma. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations second Tuesday in May and October at the Senate Chamber at Jefferson City. Secretary, S. C. A. Rubey, Clinton, Mo.

Montana. Examination with or without diploma. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, D. J. Wait, Helena, Mont.

Nebraska. Registers diploma from recognized colleges without examination, all others required to take examination. Examination fee \$10; fee for registering diploma \$2.50. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations—no special date, but are set when application is made. Secretary, Dr. D. A. Meese, Auburn, Nebr.

Nevada. Examination required of all graduates. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, C. A. Coffin, Reno, Nevada.

New Hampshire. Examination required with or without diploma. Examination fee \$10. No special examination granted to practitioners already in practice except by agreement of the full Board. No interchange of license with any States. Secretary, A. J. Sawyer, Manchester, N. H.

New Jersey. Applicant must be a graduate of a reputable dental college and hold a high school diploma or a certificate from the State superintendent of public instruction, Professor Baxter, Trenton, N. J. Examination fee, \$25. Reciprocal interchange of license with Utah, Tennessee, Indiana, Michigan and Vermont and North Carolina, in accordance with the provisions of the Asheville resolution, and by special agreement with New York.

ITEMS OF INTEREST

Examinations December 12, 13, 14. Theoretical branches in the Assembly Chamber, Trenton, N. J. Practical operative work at the office of C. S. Stockton, 7 Central avenue, Newark, on a date assigned by him. Practical prosthetic work at the office of Dr. A. Irwin, 425 Cooper street, Camden, N. J., on a date assigned by him. Secretary, Dr. Charles A. Meeker, 29 Fulton street, Newark, N. J.

New York. Diploma from a registered school is necessary for admission to the dental licensing examination. Applicants who have had six years' practice in dentistry may on unanimous recommendation of the Board receive a license to practice in this State provided they meet the necessary professional and preliminary requirements. Examination fee \$25. Reciprocal interchange of license with New Jersey and Pennsylvania. Examination September 26, 27, 28, 29. Chief, Charles F. Wheelock, Examinations Division, New York State Education Department, Albany, N. Y.

North Carolina. Examination with or without diploma. Examination fee \$10. No special examination granted to practitioners already in practice. Interchanges licenses with New Jersey. Secretary, R. H. Jones, Winston-Salem, N. C.

North Dakota. Examination required with or without diploma. Examination fee \$10; additional fee for license, \$5. No special examination granted to practitioners already in practice. No interchange of license with any States. Examination, second Tuesday in July. Secretary, H. L. Starling, Fargo, N. D.

Ohio. The Board will register without examination all graduates of the Ohio colleges who make proper application and pay the required fee of \$10 prior to the June, 1905, session of the Board; all other applications must be graduates and pass examination before they can practice legally in Ohio. Examination fee \$20; registration fee \$10. There is an exemption clause which permits the Board to register a person who has been in practice in the State of Ohio continuously since January 1, 1903; this must be verified by evidence. Examinations for 1905 will be held November 28, 29, 30, in Columbus. Application should be filed with the secretary 10 days prior to examination. Secretary, H. C. Brown, 185 East State street, Columbus, Ohio.

Oklahoma. Examination required if without diploma. Examination fee \$10. No special examination granted to practitioners already in practice. Reciprocal interchange of license with Arkansas. Secretary, A. C. Hixon, Guthrie, Okla.

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Oregon. Examination required with diploma. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Examination in November in Portland. Secretary, O. D. Ireland, 614 Dekum Building, Portland, Ore.

Pennsylvania. Examination required with diploma. Examination fee \$15. No special examination granted to practitioners already in practice. Reciprocal interchange of license with New York. Secretary, C. N. Schaeffer, Harrisburg, Pa.

Rhode Island. Examination in all cases. Examination fee \$20. No special examination granted to practitioners already in practice. In regard to interchange the Board has recommended an amendment to the law giving the board discretion. Secretary, W. S. Kenyon, 301 Westminster street, Providence, R. I.

South Carolina. Examination with diploma. Examination fee \$15. No special examination granted to practitioners already in practice. No interchange of license with any States, but is not opposed to a satisfactory plan of exchange. Secretary, Dr. B. Rutledge, Florence, S. C.

South Dakota. Applicants for examination must have diploma or must have had three years' practice immediately preceding examination. Examination fee \$10; license fee \$5. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, G. W. Collins, Vermillion, S. D.

Tennessee. Registers diploma without examination and examines all others. Examination fee \$5. No special examination granted to practitioners already in practice. Reciprocal interchange of license with New Jersey, in accordance with the provisions of the Asheville Resolution. Secretary, F. A. Shotwell, Rogersville, Tenn.

Texas. Registers diplomas and examines all others. Examination fee \$10. Temporary licenses granted to holders of diplomas between meetings of the Board good until the following meeting. Temporary licenses granted to others after an examination by any member of the Board. Good until the next meeting of the Board. Fee for temporary license \$2. Secretary, C. C. Weaver, Hillsboro, Texas.

Utah. Examination required with or without diploma. Examination fee \$25. No special examinations granted to practitioners already in practice. Recip-

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rocal interchange of license with New Jersey in accordance with the provisions of the Asheville resolution. Examination not yet fixed. Usually April and October. Secretary, H. W. Davis, 511-513 McCormick Block, Salt Lake City, Utah.

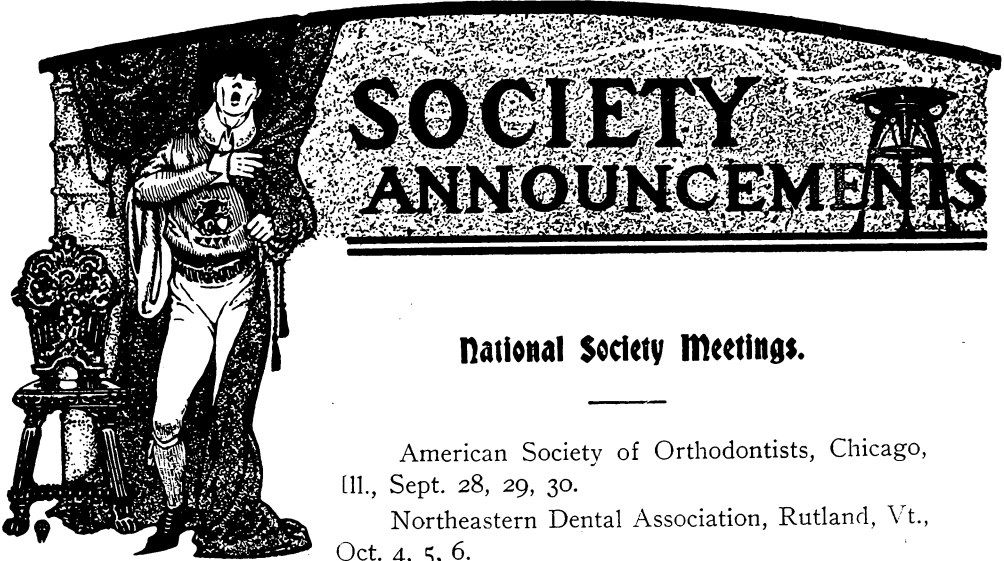
Vermont. Examination required in all cases. Examination fee, \$25. No special examination granted to practitioners already in practice. Board is empowered to make interchange of license, in accordance with the Asheville Resolution. Interchanges with New Jersey. Secretary, G. F. Cheney, St. Johnsbury, Vt.

Virginia. Examination required with or without diploma. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, R. H. Walker, Norfolk, Va.

Washington. Examination required with diploma. Examination fee \$25. No special examination granted to practitioners already in practice. No interchange of license with any States. Examinations in May and November. In 1905 on November 20. Secretary, C. S. Irwin, Vancouver, Wash.

West Virginia. Examination required with or without diploma. Examination fee \$10. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, H. M. VanVoorhis, Morgantown, W. Va.

Wisconsin. Examination required with diploma. Examination fee \$10. Dentists who have practised for four years or have been apprenticed to a reputable dentist for five years are entitled to examinations. No special examination granted to practitioners already in practice. No interchange of license with any States. Secretary, J. J. Wright, 1218 Welles Building, Milwaukee, Wis.



National Society Meetings.

American Society of Orthodontists, Chicago, Ill., Sept. 28, 29, 30.

Northeastern Dental Association, Rutland, Vt., Oct. 4, 5, 6.

State Society Meetings.

Delaware State Dental Society, October 4.

Illinois State Dental Society, Springfield, May 8-11, 1906.

Montana State Dental Society, February 23, 24, 1906.

Vermont State Dental Society, Brattleboro, May 15, 1906.

Colorado State Dental Association.

The Colorado State Dental Association held its nineteenth annual meeting at the Alta Vista Hotel, Colorado Springs, Colo., Tuesday, Wednesday and Thursday, June 20, 21, 22, 1905. Election of officers as follows: President, W. T. Chambers, Denver; Vice-President, J. Allen Smith, Colorado Springs; Secretary, B. Frank Gray, Colorado Springs; Treasurer, Wm. Smedley, Denver. Fort Collins was chosen as next meeting place.

H. W. BATES, Secretary.



Offer of Prizes by the New York Institute of Stomatology.

With the desire of stimulating investigation in any field of activity directly relating to Dental or Oral Science, the New York Institute of Stomatology offers two prizes for the best papers submitted to it embodying the results of such original research.

The first prize for the best paper will be a gold medal and \$250. The second prize for the next best paper, a gold medal and \$100.

Conditions.

- a. The papers offered for the competition must be typewritten in English.
- b. Must contain not less than 1,500 nor more than 3,500 words.
- c. Must be signed only by a motto or *nom de plume*.
- d. Must be accompanied by a sealed envelope marked with the same motto or *nom de plume* on the outside, containing the true name as well as the motto of the contestant within.
- e. Must be sent to the chairman of the Executive Committee, Dr. F. Milton Smith, 38 West 36th street, on or before March 1, 1906.

Judges.

The following gentlemen have consented to act as judges:

Dr. C. N. Johnson, of Chicago, editor of *Dental Review*; Dr. Eugene H. Smith, of Boston, Dean of Harvard University Dental School; Dr. Wilbur F. Litch, of Philadelphia, editor of *Dental Brief*, under the following:

Rules.

1. The papers will be sent to the judges without the sealed envelopes, containing the names of the contestants, which will be retained by the Executive Committee till the decision of the judges is made.
2. In deciding on the merits of papers offered in competition the judges will be requested to take into consideration the value and character of the research work, the results of which are presented, more than the literary character of the essays, but to give the latter due credit.
3. The judges are expressly authorized to decide which, if any, of the papers submitted to them are of sufficient merit to entitle them to the prizes offered, or to withhold the award from all the papers if none are deemed worthy.
4. Authors of the prize papers will be invited to read their essays before a meeting of the Institute, as will the writers of other papers of especial merit. The Institute reserves the right to the first publication of all papers offered in competition.

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Papers not used will be promptly returned to the writers. Those read before the Institute will be as fully discussed as possible and when published will be adequately illustrated.

For further information address Dr. F. Milton Smith, 38 West 36th street, New York, N. Y.

American Society of Orthodontists.

The fourth annual meeting of the American Society of Orthodontists will be held Sept. 28, 29 and 30, 1905, at the Stratford Hotel, cor. Jackson Blvd. and Michigan Ave., Chicago, Ill.

Papers will be presented by Dr. Lloyd S. Lourie, Dr. Alfred P. Rogers, Dr. Martin Dewey, Dr. Frederick S. McKay, Dr. Herbert A. Pullen, Dr. R. Ottolengui, Mr. Carl Werntz, Dr. Edward H. Angle, Dr. Varney E. Barnes, Dr. Richard Summa, Dr. Walter H. Ellis, Dr. Frank M. Casto, Dr. S. E. Dodson, Dr. Charles A. Hawley, Dr. A. H. Ketcham, Dr. Norman G. Reoch, Dr. William O. Talbot, Dr. William J. Brady, Dr. Louis P. Bethel, Dr. G. P. Mendell.

All who are interested in Orthodontia are cordially invited to take part in this meeting.

RICHARD SUMMA,
FRANK M. CASTO,
EDWARD H. ANGLE,
Board of Censors.

Wisconsin State Dental Society.

At the thirty-fifth annual meeting of the Wisconsin State Dental Society held at Oshkosh, Wisconsin, July 18-20, 1905, the following officers were elected: President, F. G. Van Stratum, Hurley; first vice-president, M. L. Christensen, Oshkosh; second vice-president, Mary Hastings, Oshkosh; Secretary, W. H. Mueller, Madison; Treasurer, Adolph Gropper, Milwaukee.

The next meeting will be held at Madison, Wis., 1906.

W. H. MUELLER, *Secretary.*

Southwestern Iowa Dental Association.

The ninth annual meeting of the Southwestern Iowa Dental Society will be held at Creston, Iowa, October 10 and 11, 1905.

GEO. BROOKS, *Secretary.*



The Missouri State Dental Association.

At the Fortieth Annual Meeting of the Missouri State Dental Association, held in St. Louis, May 24 to 26, the following officers were elected: President, W. M. Carter, Sedalia; first vice-president, F. H. Achelpohl, St. Charles; second vice-president, F. G. Worthley, Kansas City; recording secretary, H. H. Sullivan, Kansas City; corresponding secretary, Sam T. Bassett, St. Louis; treasurer, J. T. Fry, Moberly. Board of Censors: J. C. Pasqueth, Mexico; J. L. Bridgeford, Macon; DeCoursey Lindsley, St. Louis. Committee on Ethics: J. B. McBride, Springfield; A. J. Prosser, St. Louis; F. M. Fulkerson, Sedalia; Committee on Publication: Otto J. Fruth, St. Louis; J. W. Hull, Kansas City. Committee on Inventions and New Appliances: Ralph H. McCrum, Springfield. Committee on History of Missouri State Dental Association: Burton Lee Thorpe, St. Louis. Time and place of next meeting, May, 1906, Springfield, Mo.

SAM T. BASSETT, *Corresponding Secretary.*

Union Meeting of the Seventh and Eighth District Dental Societies of the State of New York.

Union meetings of the Seventh and Eighth District Dental Societies of the State of New York will be held at the Osburn House, Rochester, N. Y., October 31, November 1-2, 1905.

Mark these dates off in your appointment book and attend. It will be time well spent. If you have anything of interest communicate with the Business Committee: C. F. Bunbury, Chairman, 62 State street, Rochester, N. Y.; J. W. Graves, 32 Triangle Building, Rochester, N. Y.; S. Eschelman, 421 Franklin street, Buffalo, N. Y.; D. H. Young, Attica, N. Y.

Rhode Island State Board of Registration in Dentistry.

The Rhode Island Board of Registration in Dentistry will hold its next meeting for the examination of candidates, at the State House, Providence, R. I., Tuesday, Wednesday, and Thursday, October 3, 4, and 5, 1905. Application blanks may be obtained of the Secretary and must be carefully filled in and returned, together with the fee of twenty dollars, not later than September 25. W. S. Kenyon, Secretary, 301 Westminster street, Providence, R. I.